

PROGRESSIVE ARCHITECTURE

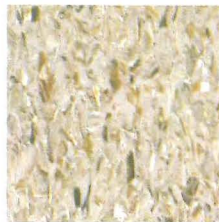
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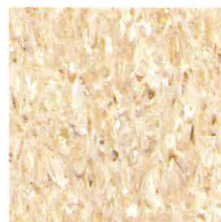
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Alternatives**

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for heavy-traffic areas**



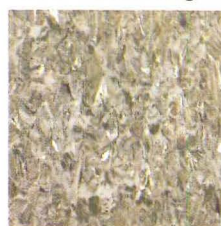
VL-13 Olive Mist



VL-11 Frosted Beige



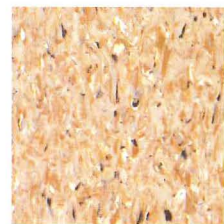
VL-10 Mocha White



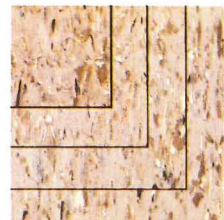
VL-15 Jade Haze



VL-14 Lemon Ice



VL-12 British Tan



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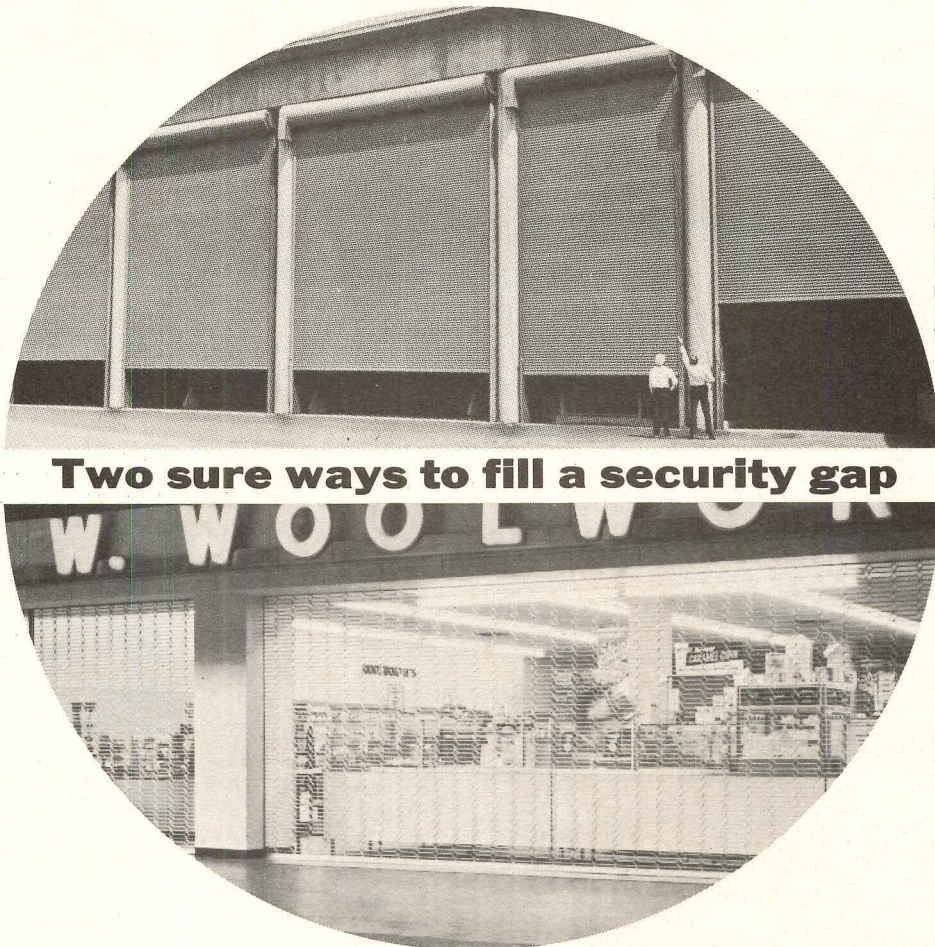
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P/A THIS MONTH

PROGRESSIVE ARCHITECTURE® JULY 1970

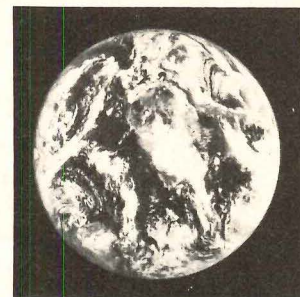
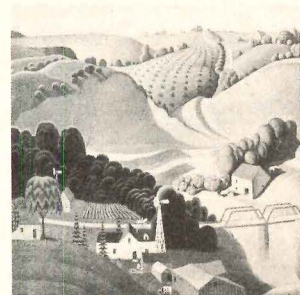
Cover: Inside Ant Farm's Environmental Structure at the Freestone Conference.
Photo: Joshua Freiwald

Advertisements for a Counter Culture

Ideas, born at the Spring Equinox conference held at Freestone, California, are presented as a series of advertisements. Twenty-one pages of public notices proclaim the means to design new social and building forms in harmony with the life patterns of an alternative culture. Photographs, drawings, and comments are presented unedited as they were submitted to P/A by the conference participants.

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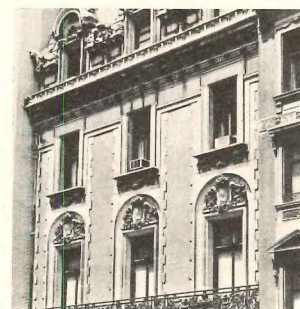
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Eclectic Classicism

Long rejected and ignored in the rise of a modern architecture, the value of Beaux-Arts and related modes is reassessed as the basis for a common urban language. Developing in reaction to a profusion of historical styles, they established new standards of planning and design, leading to a degree of competence and specialization that made American architects of the period world leaders in the profession.

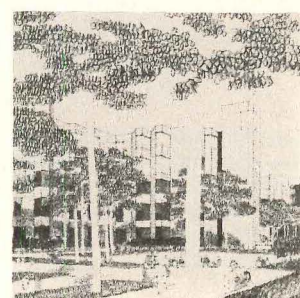
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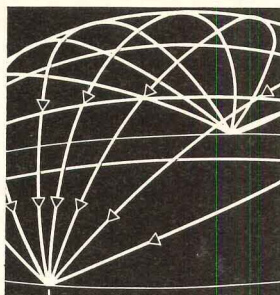


Toward an Urban Vernacular

The basis for a common language of urban forms is sought in a group of imaginative solutions to real economic problems. Most of these complexes, beginning with the best public housing of the 1930s, employ common materials and construction techniques with uncommon sensitivity to develop inexpensive yet sophisticated interior and exterior spaces.

100

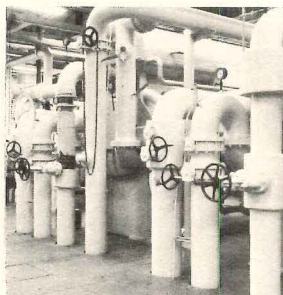




The Spheroid Grid Dome

Architect Ted Litzenberger has designed a dome that can be easily assembled on site using readily obtainable materials and local unskilled labor. The dome is well suited for both temporary and permanent exhibitions, is capable of greater spans per unit weight than other existing domes, and is surprisingly stable for its lightweight frame structure.

106



District Cooling/Heating Plants for Central Cities

Ten companies, involved in the district-plant approach to heating and air-conditioning, are selling chilled water, hot water, and steam at a cost less than a client can manufacture for himself. P/A presents a study that analyzes the district-plant solution for several given situations.

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Chemicals in Finishing

The proliferation of new chemical finishes that have swamped the architectural market in recent years has induced the creation of a new technical field that deals with the proper use of surfacing chemicals. P/A discusses the role of the new finishing specialist and defines the different types of chemicals in use today.

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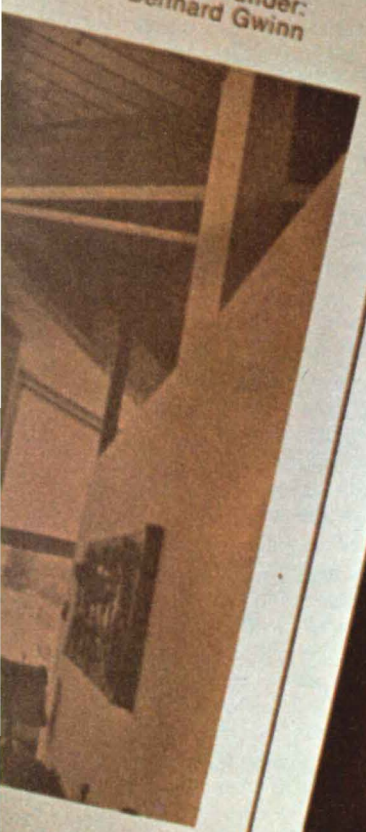
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...or at-

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Bennard Gwinn

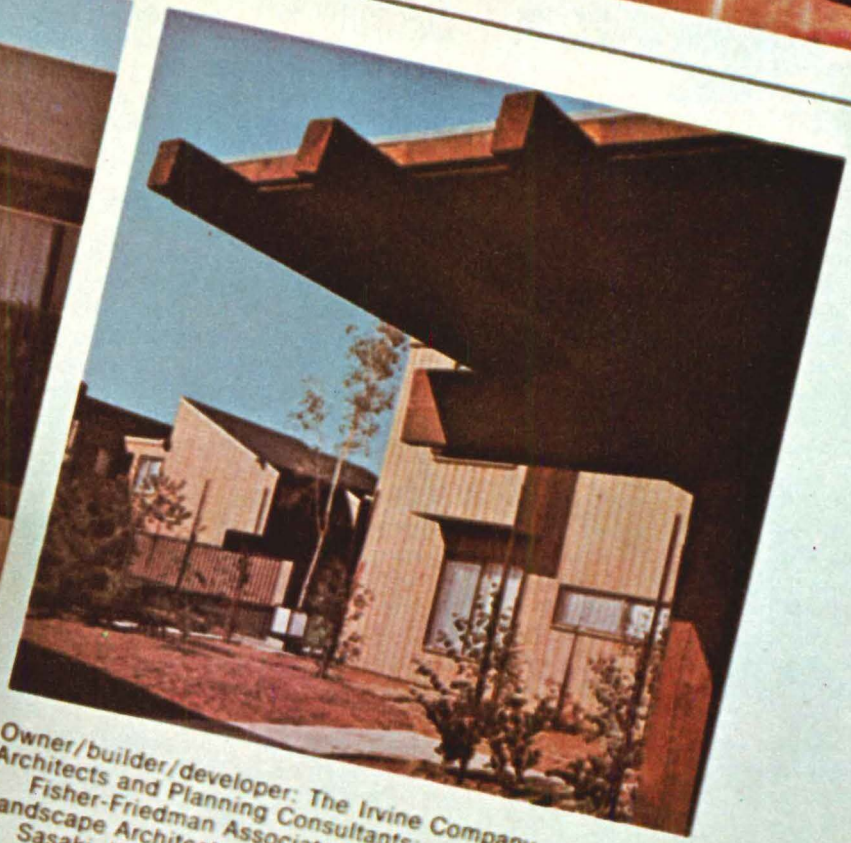


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the paneling, and elimination
of maintaining a painted
addition, the use of wood
permitted the walls to be
pre-fabricated."

"The first unit built was used
model and held up extremely
after being open to the public for
a year. We feel that people re-
wood paneling more favorably
to other wall surfaces."

Architect: Zaik-Miller, AIA



Owner/builder/developer: The Irvine Company
Architects and Planning Consultants:
Fisher-Friedman Associates
Landscape Architects:
Sasaki, Walker Associates, Inc.

...was essential to
...ose

YOUR POINT OF VIEW

P/A Refreshing

Dear Editor: I wish to take this opportunity to commend you for the continuing quality of P/A. It is certainly refreshing in our every day existence to have a journal that has much to say about the manner in which we live. So frequently, it seems that our Washington guardians are more concerned about how another American was killed in a foreign country rather than that he *was* killed. And they seem to strive to apply this idiotic logic to the quality of life in this country as well. Consequently, journals such as P/A must take their hands and lead them. "Lead on, O great and mighty warrior."

Ted Baker ASLA
Miami, Fla.

What Hath HUD Wrought?

Dear Editor: What has Operation Breakthrough accomplished, after all the fanfare, beyond the fact that, consciously or not, it has a) subsidized big industry at the taxpayer's expense, with no guarantee whatever that the public as a whole will profit; b) delayed, rather than advanced the solution to the housing crisis by focusing federal attention on the possibilities of mass-production . . . in the indeterminate future; c) done a great disservice to that important branch of our free economy which is represented by the small and the medium-size builder, who is responsible for 80 percent of the nation's housing; d) held the public interest in an atmosphere of "continuing suspense, which was built up to the final selection of winners" . . . and then dashed it to the ground with the phrase "even though the actual housing is a long way off," and thus, at a most crucial time, adding to the public's lack of confidence in its leadership?

In the April issue of P/A ("Operation Breakthrough," p. 120) the article starts out by saying that, "without Federal subsidization, Operation Breakthrough will never solve the housing problem." It further states, "Breakthrough might re-

duce rents by 15 percent at most, but the situation will not change much for those ten million who need rent subsidization."

Furthermore, in a curious inversion of emphasis, it says, "HUD, by interesting industry in the fortunes (?) to be made in the housing field, could form lobbies to force Congress (HUD?) to loosen its purse strings and, in effect, subsidize rents on a massive scale."

And finally, "Winners (of Operation Breakthrough) have advantages like having prototypes built at HUD's (the public's) expense, thereby receiving HUD's "Good Housing Seal of Approval" . . . and obtaining HUD backing . . . as well as easier access to other government housing programs."

And one more, a real beaut, "HUD will use its influence to aggregate the market."

All highly laudable, and it appears from the foregoing that all we have to do (we, who already own at least one house) is to wait a few years and not worry about housing in the interim.

However, nothing whatever is said about those who have no place to live, and if the problem did not date back as far as the days of President Franklin Roosevelt, it wouldn't matter too much. But the harsh fact is that Operation Breakthrough at best will touch only a minor aspect of the problem, and this on its own terms and in its own time.

HUD is doing nothing, literally nothing, about the grass roots side of our fairly well balanced system. What about the small builder and more important still, the numerous unheralded and nameless nonprofit sponsors who, with surprising resilience, attack the bulwarks of zoning, building codes, labor, high interest rates, and the FHA's exasperating delays, day by day, alone?

Unless P/A publishes a sequel, something like "Son of Operation Breakthrough," then it is guilty of perpetrating a cruel hoax. The nation's foremost technologically-oriented publication owes it to its subscribers to bring out these two points:

a. The problem deserves a study in depth of the need for housing (and here, I prefer "dwellings") in terms of types and density and location and above all the psychological need among real people for a particular kind of space, and not a repetition of the superficial quantitative summation of "26 million units . . . in ten years."

b. The real future lies, not in making industry happy with all the money your article refers to, but in the

way people feel about the results. I believe — and this is by no means a new idea, that the future of world shelter lies in the creation of communities and that the emphasis on "housing" as such is misplaced.

Robert H. Mutrux, AIA
Wilton, Connecticut

(The problem of lack of housing has been aggravated by the fact that the small builder has been responsible for 80 percent of the nation's housing. He does not have the resources nor has he proved himself particularly aware of all the psychological needs of the occupants, a vital consideration according to Mutrux. HUD's efforts are laudable in that they have approached the problem on a grand scale using technological means of comparable force. Their efforts to involve industry represent a last-ditch stand for a capitalistic society to solve problems that only socialism seems to have tackled so far with any success. By involving industry they do have to hold out a promise of profit. What we are pointing out in the article is that this goal is fairly hard to accomplish without loose federal money for rent subsidies. Regarding the qualitative results of the Breakthrough housing, that, of course, must be analyzed in depth — after industry proves it can, in fact, provide the quantity so desperately needed. S.S.)

Feigen Gallery: The Architect Speaks

Dear Editor: I have just received copies of the article by Stephen Kurtz covering the Feigen Gallery (P/A, Feb. 1970, p.88). I think P/A did a very nice job both with the photographs as well as the criticism. There seem to be varying opinions about what kind of art (and which size) this Gallery is suited best. There is an erroneous assumption that the small size of the various parts of the Gallery and the many changes in ceiling levels are part of the basic concept. This is not so, however, but rather that their size and shape was partly dictated by existing conditions and one had to manipulate with various ways to cope with them.

I liked the attention given in your article to detailing, however I think that good detailing is just part of a good job, whether a more expensive gallery or low-cost housing. If architects would not divide their emphasis of attention in such a manner, better conditions could be produced — not only for special clients.

Hans Hollein
Vienna, Austria

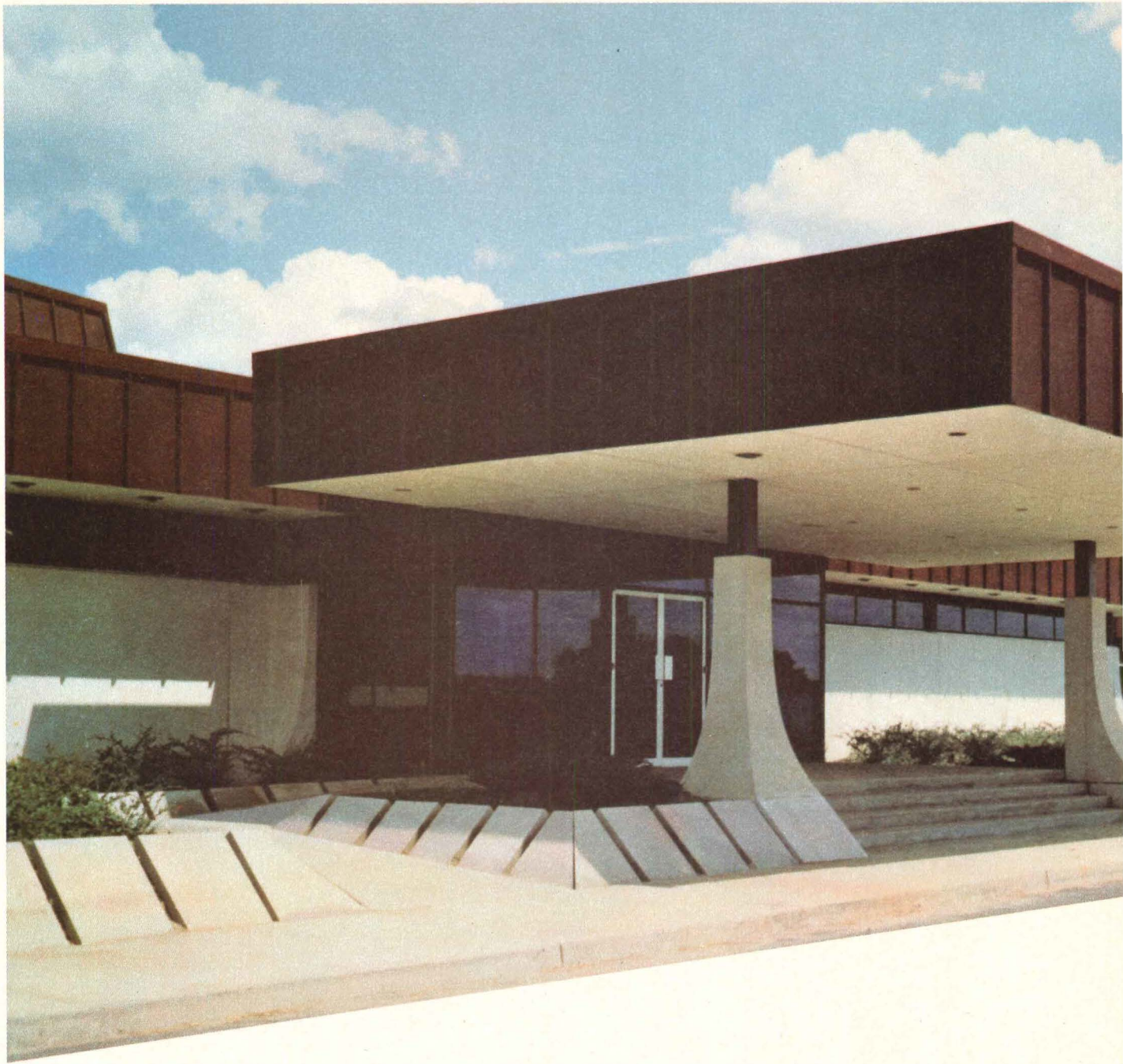


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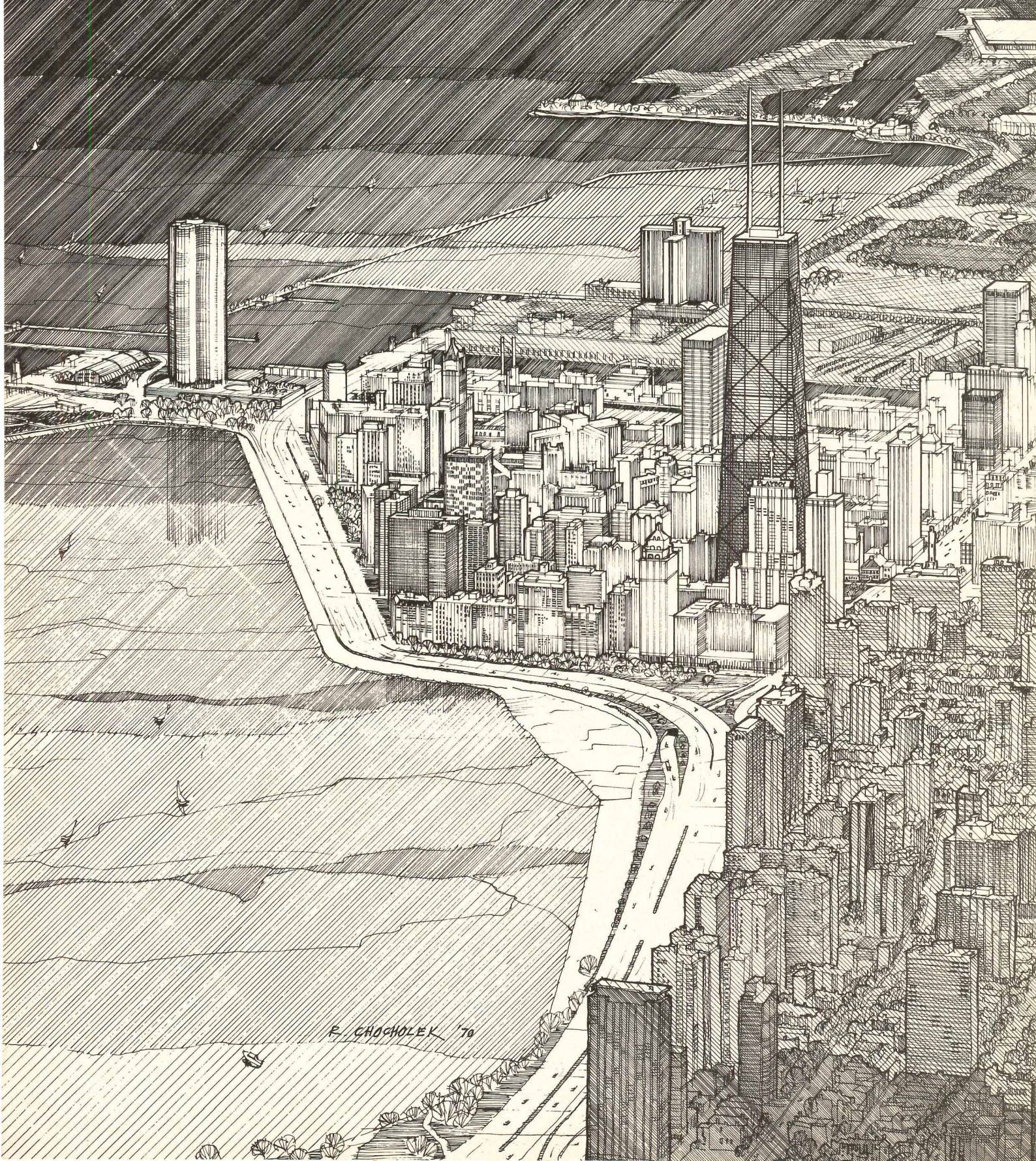
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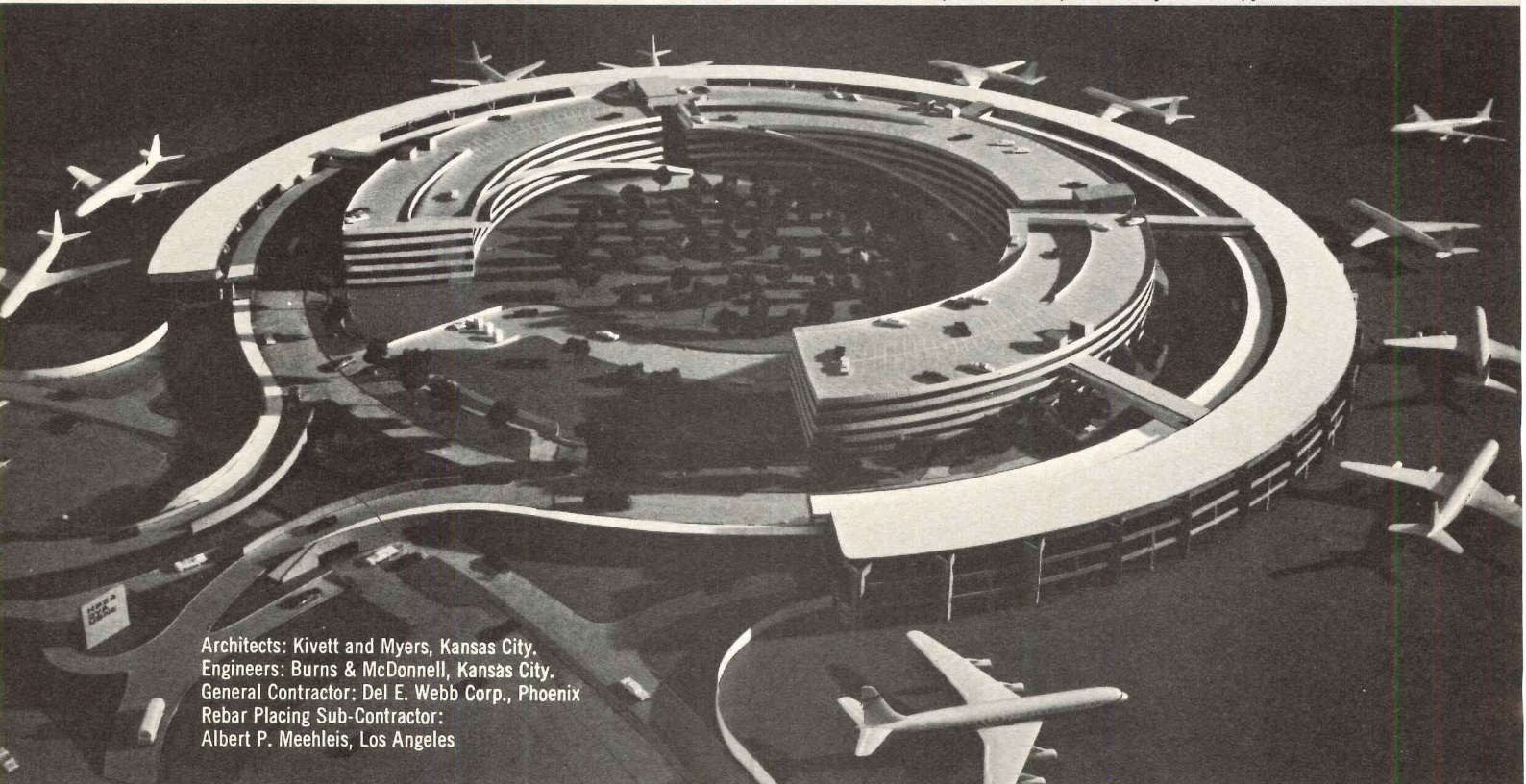
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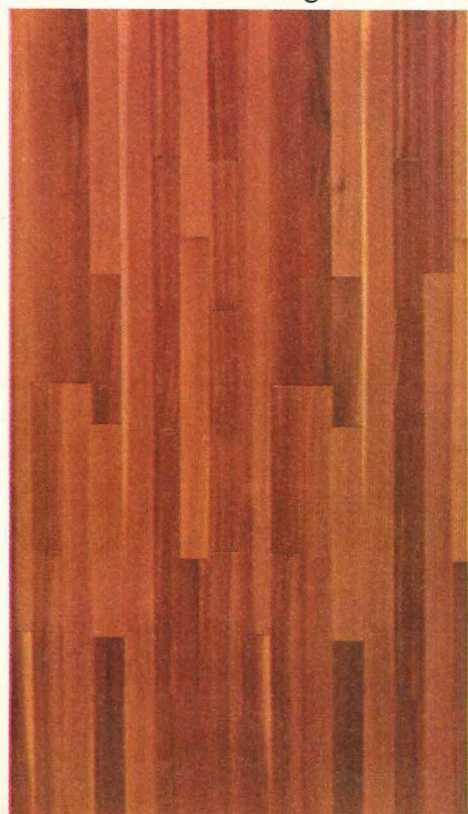
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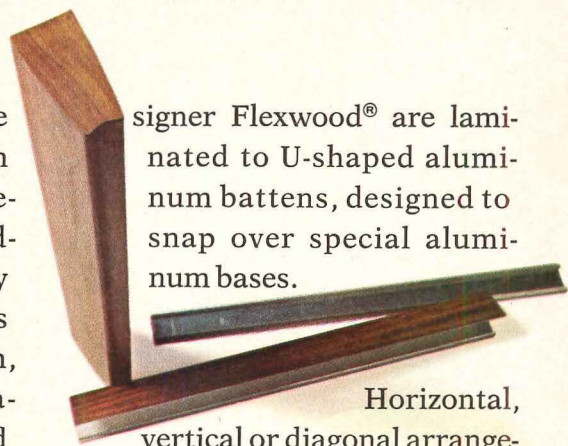
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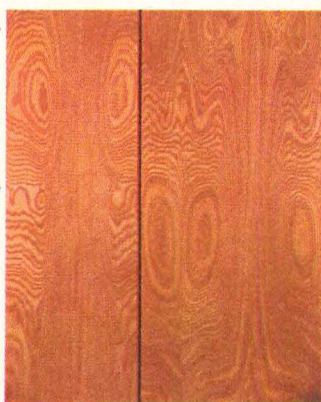
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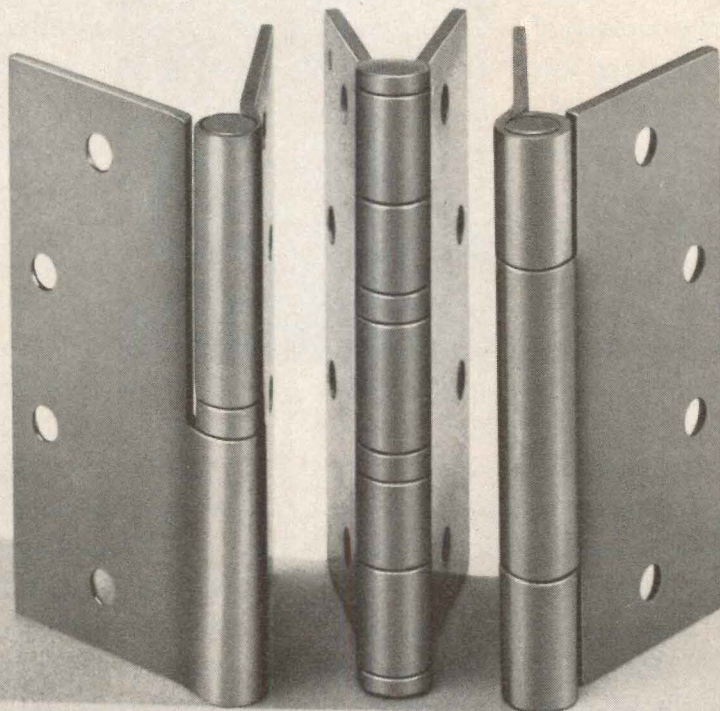
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are covered with
porcelain-enameled steel**

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And it proved more economical
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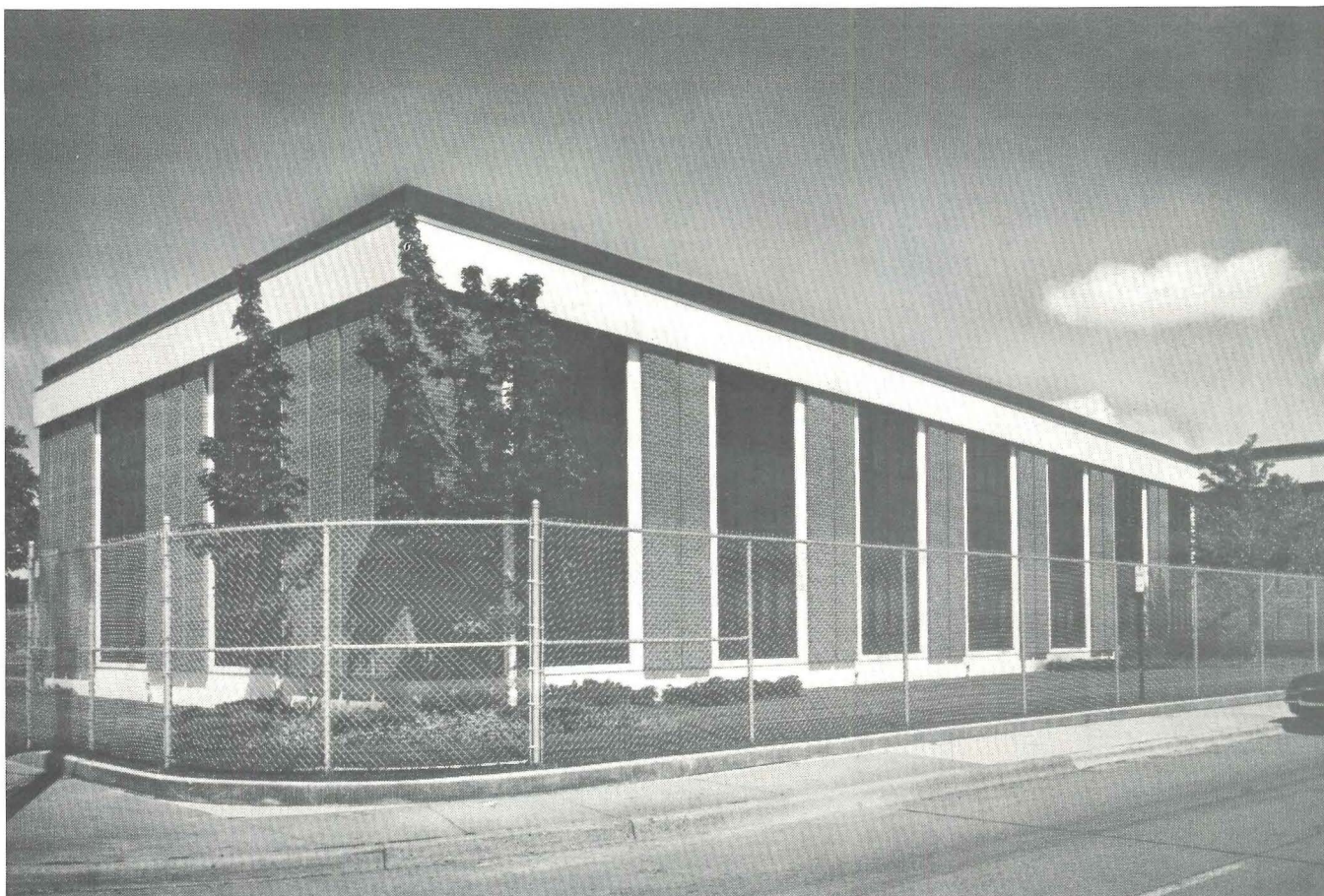
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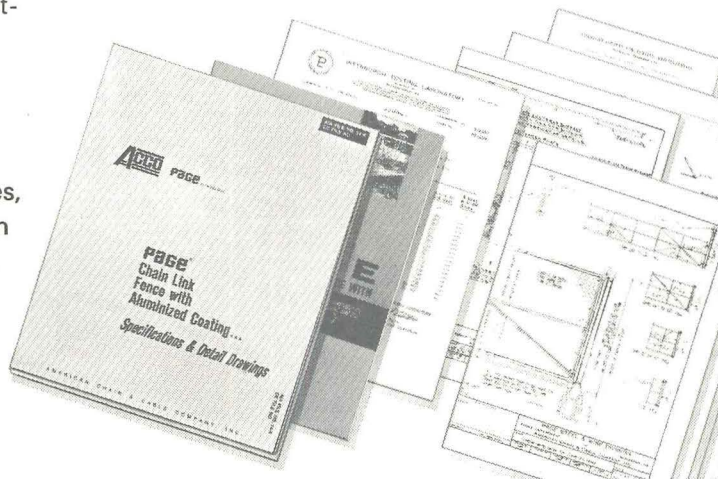
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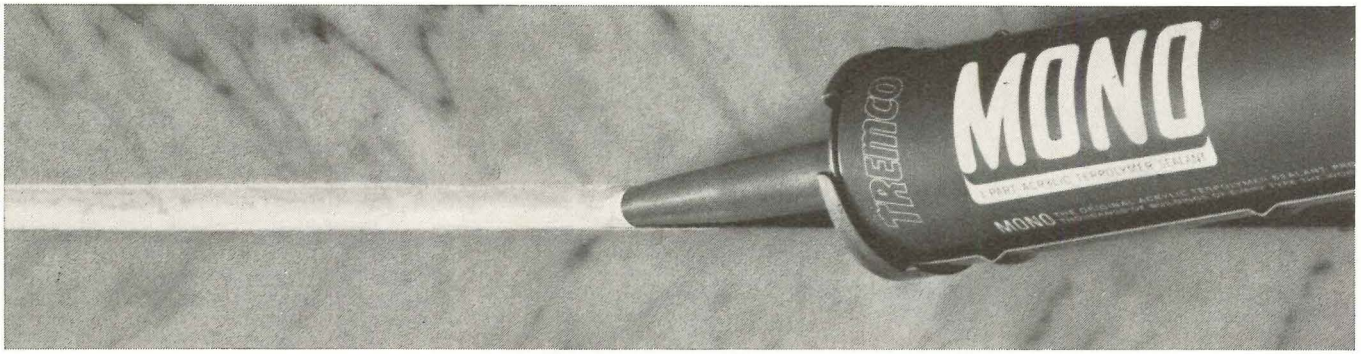
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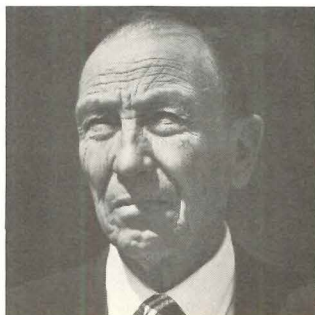
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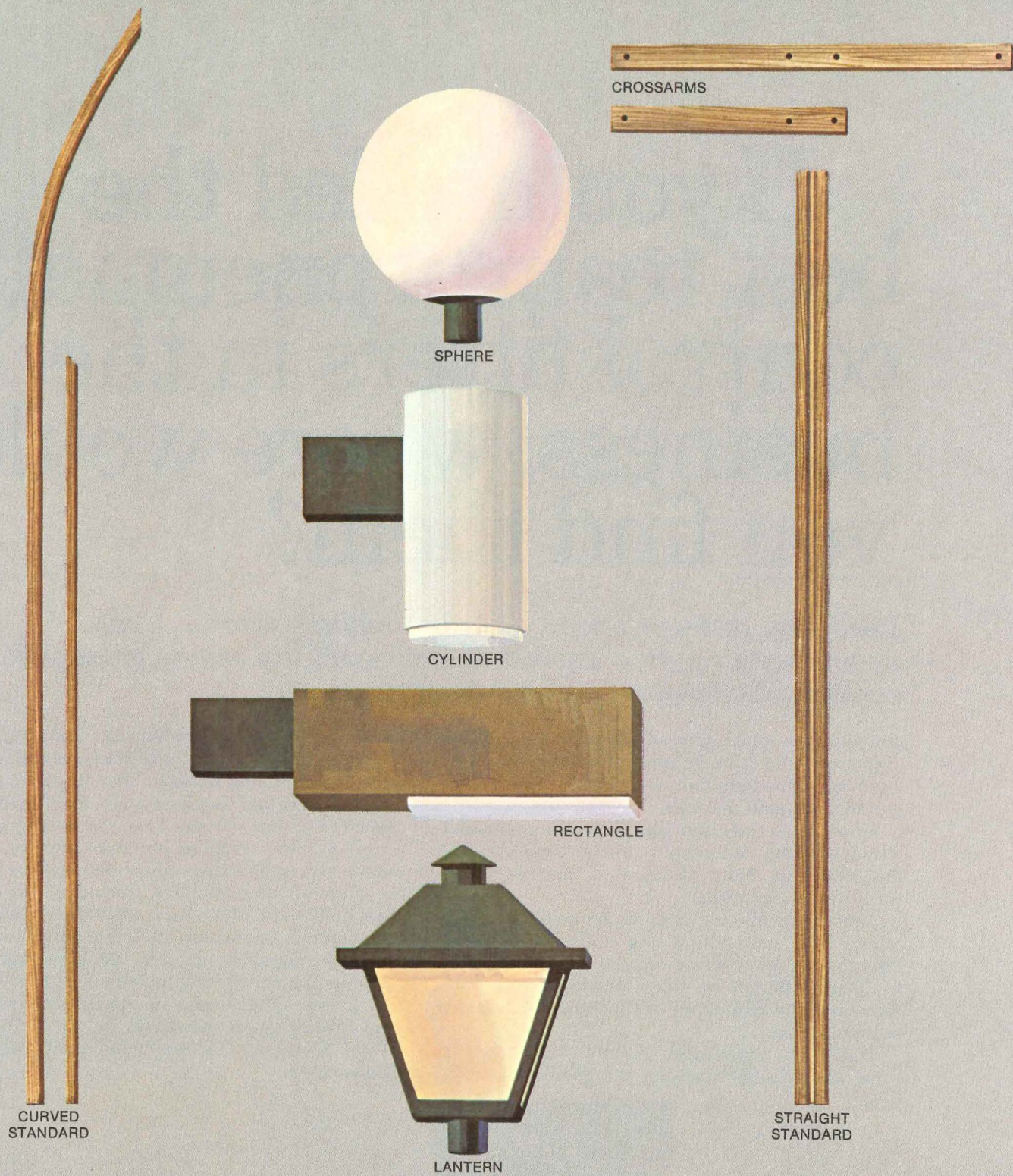
Fact: nobody knows more about pneumatic controls than Barber-Colman.

(Left to right) Tom McGovern, Philadelphia (10 years); Jim McKee, Pittsburgh (22 years); Gordon Walker, San Francisco (18 years); Bob Kalstad, Minneapolis (16 years); Joe Weiler, Chicago (21 years); J. A. Timmons, Houston (28 years); Joe Russini, New York (17 years); John Streetman, Birmingham (22 years); Tony Figueira, Boston (15 years). In the background is the International Towers, Inc., building near Chicago's O'Hare International Airport—an all Barber-Colman pneumatic control job.

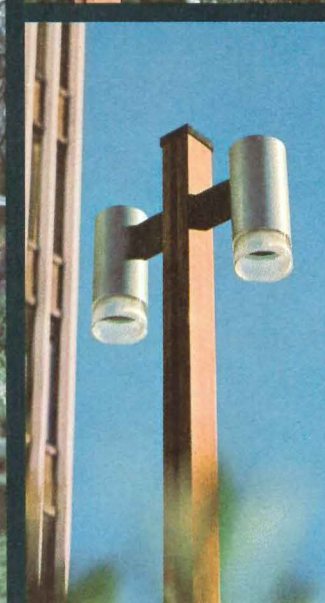
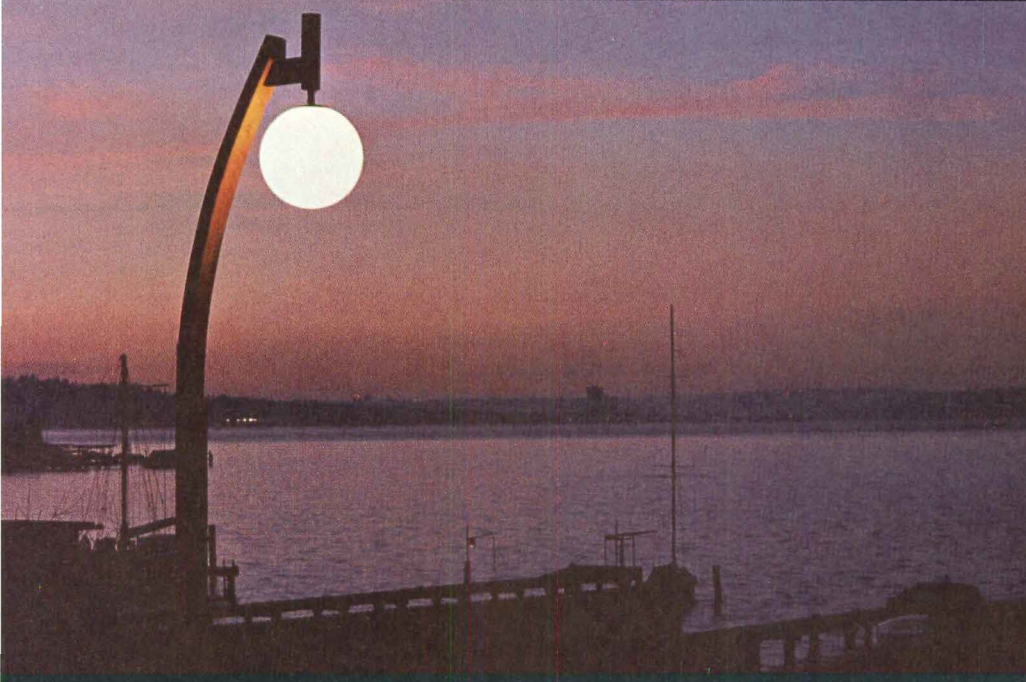
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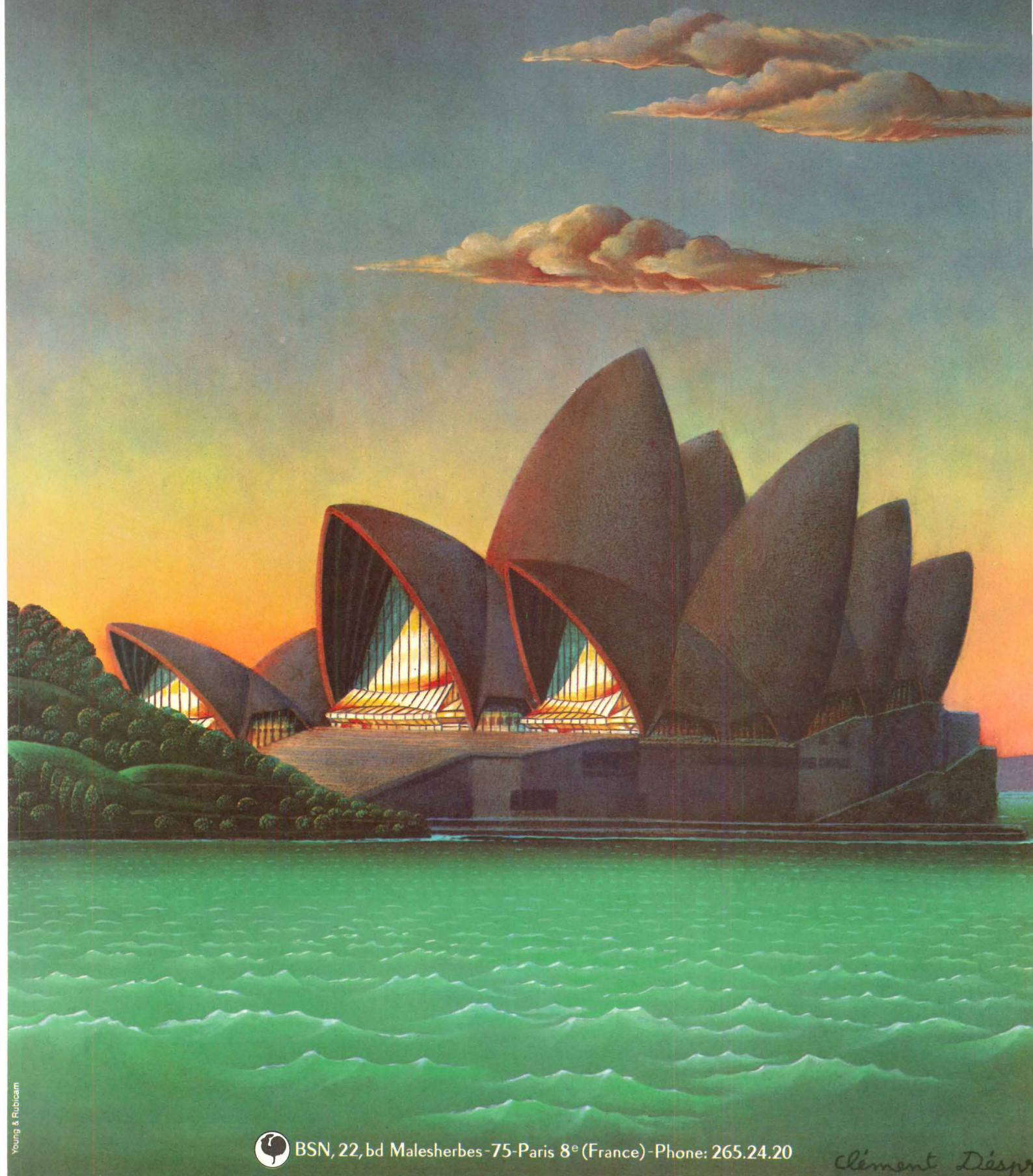


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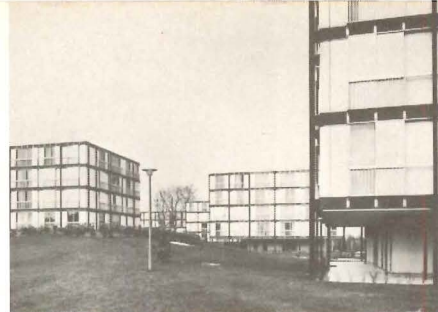


Spring at Berkeley: Archimedia

In the May 1970 issue (p.33) P/A announced the Archimedia conference sponsored by the Department of Architecture in the College of Environmental Design (CED) at the University of California at Berkeley that was to have taken place in mid-May. At that time we stated that Marc Treib, teacher at CED and organizer of the event, would describe the conference in a later issue. Because of the political events of May, the conference never took place. What did occur, Marc has reported:

archimedia was rolling along singing a song when it all hit the fan and came back home. troops into cambodia. monday after the kent state murders feelings and pressure began to rise. tuesday we met in emergency session trying to figure out what to do. on one side was the idea of the extra-conference activities. many had worked long on it and to us all it was like having a child die on you. but after discussion we agreed that there was no way we could guarantee content in the presence of such an overwhelmingly heavy protest air. we realized that it was unlikely that it could be a postponement instead of cancellation. so it died and we were sad. that afternoon the college met in one of the most complete (largest crowd) college meetings ever. and overwhelmingly, let's say unanimously, a majority of those there, about one third of the college, voted to strike; that strike word is ambiguous as it really isn't a strike. call it work stoppage, reinstitution or constitution of university resources,

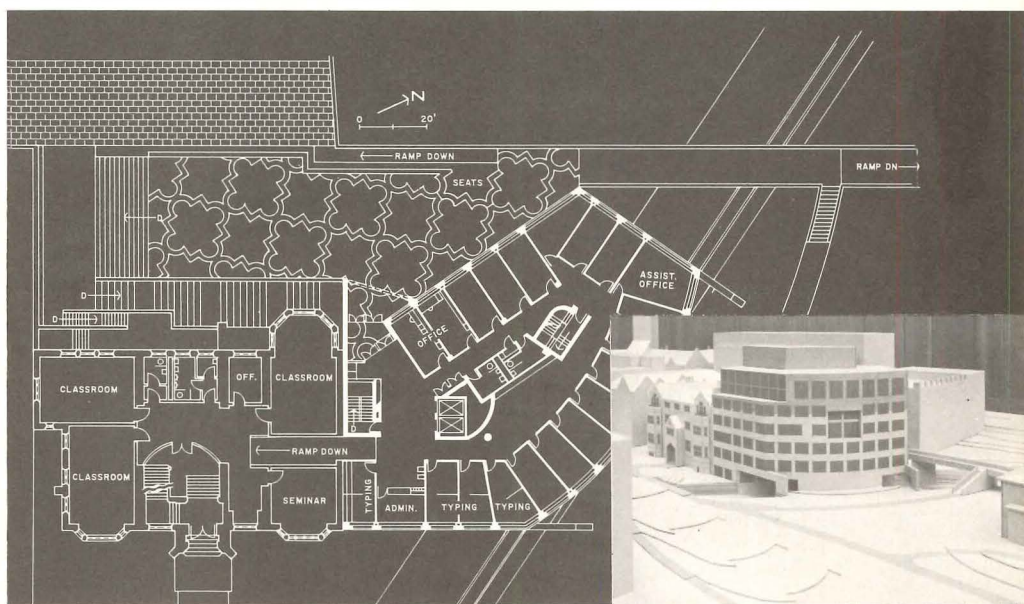
whatever, but the goal was now fixed: work for peace. on reagan's announcement that the university was to be closed for the next three days the college springs into action and gets itself together like it never has before. the usual apathy that runs rampant in the school and college is gone. all sorts of work groups formed. one in city and regional planning gets 150 people to go to hudson to picket and protest and try to get sympathy inside. coordinating continues with the university. with poster distribution the college becomes the graphic and publication nerve center for the university at large. this is the most fantastic thing of all, like a sleeping giant slowly rising to its feet. stretching and flexing its muscles, the giant takes its stride and begins to pace the university. the strike and the move to end the war is one gigantic design problem — resources, means of action, optimization, budget, implementation, feedback, social behavior — all that is explored. efforts are nonviolent, determined and directed.



1970 Reynolds Memorial Award

The Fourteenth Annual Reynolds award went to Paris architectural firm Lods, Depondt, Beauclair for the design of a low-cost industrialized housing system that uses aluminum panels and other components. The *Projet Experimental de la Grand'Mare* in Rouen is a 500 apartment complex composed of 25 five-story walk-up buildings. The system allows unskilled labor to fit aluminum and glass panels into the structural steel frame with no scaffolding required. The steel floor frames, which also carry utility lines to individual apartments, are pre-assembled.

The jury members of this AIA administered program were George E. Kassabaum, William W. Caudill, Samuel M. Brody, Ian MacKinlay, and Boyd Auger.



Yale Competition Results Announced

Recently announced winner of the Yale Mathematics Building Competition is the Philadelphia firm of Venturi and Rauch. After all the months of judging, narrowing down finalists, and finally picking the winning scheme, the results do not come as a surprise to those who had heard all the superbly clairvoyant predictions of this outcome ever since the competition's announcement.

Nevertheless, this campus of architectural monuments can use a Venturi building. And the building, as is to be expected, is imaginatively

"ordinary." Conventional windows checker the glazed-brick curtain walls of the steel-frame structure. The architects shortened the façade on the street, set back the upper floors and changed the color of their brick to diminish the building's bulk. The bowed end of the building acknowledges the corner location, bridging railroad tracks that obliquely slash through the site. Meanwhile, acoustics are being analyzed to alleviate noise from the railroad that may pervade the three floors of offices and two floors of library above.

An abstract geometric composition featuring a white, three-dimensional cube-like structure with a fine grid pattern on its visible faces. The cube is positioned diagonally, appearing to float or rest on a surface. The background is a vibrant yellow-orange, overlaid with a complex network of thin, intersecting lines in various shades of yellow and orange, creating a sense of depth and perspective. The overall effect is one of modern, architectural design.

For the well-



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For complete information on Perm-Align lenses write: Dept. B7, Holophane Company, Inc. 1120 Avenue of the Americas, New York, N.Y. 10036

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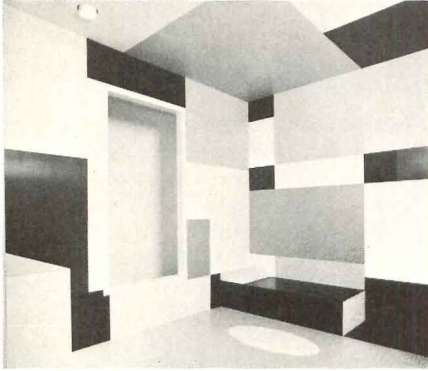
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Walk-In Painting

Although as a painter, Mondrian had a substantial influence on the course of modern design, as a designer his work was rare and little known. One of the few schemes he projected, "Salon for Madame B" in Dresden in 1926, was not even executed until recently. Last spring the Pace Gallery in New York created the 12 x 14 x 10 ft room for exhibit from detailed drawings with color specifications belonging to Mondrian's friend Harry Holtzman.

Mr. Holtzman felt that laminated plastic was the only suitable material for the interior (which includes cupboards, bed, and an oval demarcation for placement of a rug). Formica Corporation was engaged to produce the panels to match precisely colors from Mondrian's own paint tubes, also in Holtzman's collection. The pigments and drawdowns were analyzed spectroscopically and are now being produced in a line of Formica plastics for commercial use.

One problem that did not seem to be analyzed as carefully as the colors in the Pace Gallery was the lighting. Although Mondrian's design would suggest diffuse lighting, the room was illuminated by downlights that tended to refract against the Formica panels, dissolving perceptual unity of the color pattern. Hopefully the room received better consideration when it was on view last month at Los Angeles County Museum. It will also be on display at the Art Institute in Chicago in August and September.

Cities Look at People-Movers

It's about time an American city moved the cars out of midtown. San Jose, Calif. plans to return the streets to the people with a six-mile conveyor belt that will transport pedestrians from perimeter parking facilities to the downtown Park Center and San Antonio Plaza redevelopment projects. Construction on the

wheelless car system, similar in principle to the "people mover" at Disneyland, will begin in 1972. The system's first leg is about one mile and will cost approximately \$5 million.

The continuous belt permits passengers to board cars from a platform moving at 1½ mph, the same speed at which cars travel when passing through stations. As cars depart they move over a bank of accelerator wheels that increase movement to a speed of 15 mph.

Meanwhile New York City has been thinking and studying the possible use of people-mover systems both downtown (Wall Street) and midtown. The Metropolitan Transit Authority has recently called in Okamoto/Liskamm, planners, to propose a midtown system that would extend east-west across 48th St., linking up the United Nations, Park Avenue offices, Fifth Avenue stores, Broadway shows, the projected West Midtown development, and the dock area.



"Giant Billiard," a 50' x 50' air-inflatable matress replete with giant beach balls.

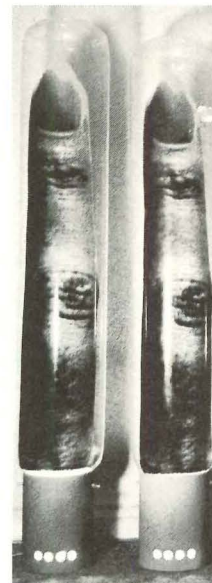
House Movers Move In

"Haus-Rucker-Live," an exhibition last month at the Museum of Contemporary Crafts in New York, featured the Viennese architects/artists actually living at the museum among their exhibits. The three, Laurids Ortner, "Zamp" Kelp and Klaus Pinter, were reduced to two during the show due to an accident that detained Laurids in Dusseldorf.

Zamp and Pinter set up living quarters at the museum to humanize, or de-museumize, the usual museum atmosphere. Visitors viewing their exhibit of "environmental games" were free to talk to them and poke around their "bedrooms." To further



"Battleship," a bed-cum-overhead canopy/pin-ball machine of two human figures lighting up and beeping.



"Roomscrapers," 8-ft-high lamps of vinyl cylinders on which a finger has been silkscreened.

demonstrate the group's accessibility to the public (and their sense of humor), Zamp and Pinter deliberately chose Grandmother's Attic furniture of American derivation.

Exhibits were intentionally playful and humorous including a wooden room with a lopsided floor through which viewers entered the museum.

The Haus-Rucker group hosted many events during their stay, including a block-party on June 2 for the American Association of Museums in conjunction with the Museum of Modern Art, the Museum of American Folk Art, and the Museum of Contemporary Crafts. "Giant Billiard" was again moved out to the street for this occasion (the first time was at the opening) for all the passers-by to romp and frolic.

All these activities and many more — including P/A staff members talking to Zamp and Pinter at the Museum — have been recorded on a documentary film to be issued as the exhibit's catalog. Two versions are available: a four minute 8 mm home movie and a longer version for educational purposes.

NEWS REPORT



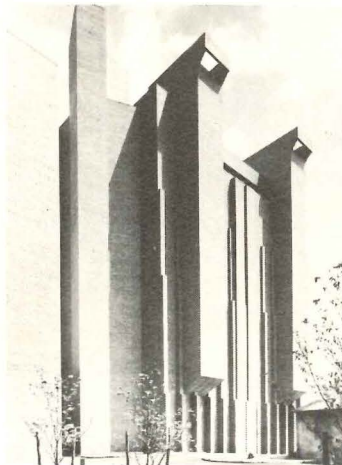
Herman D. Ruth Residence, Donald E. Olsen, Architect.



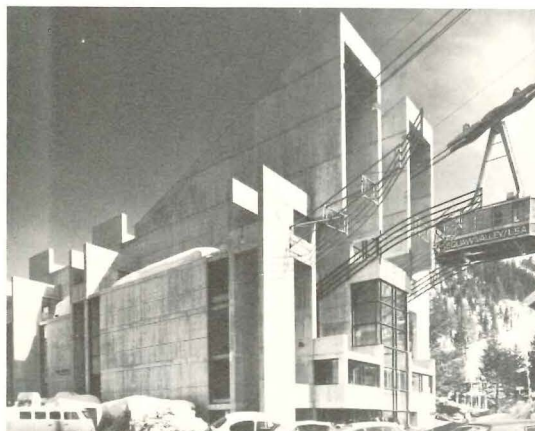
Lake Point Tower, Schipporeit-Heinrich, Inc., Architect.



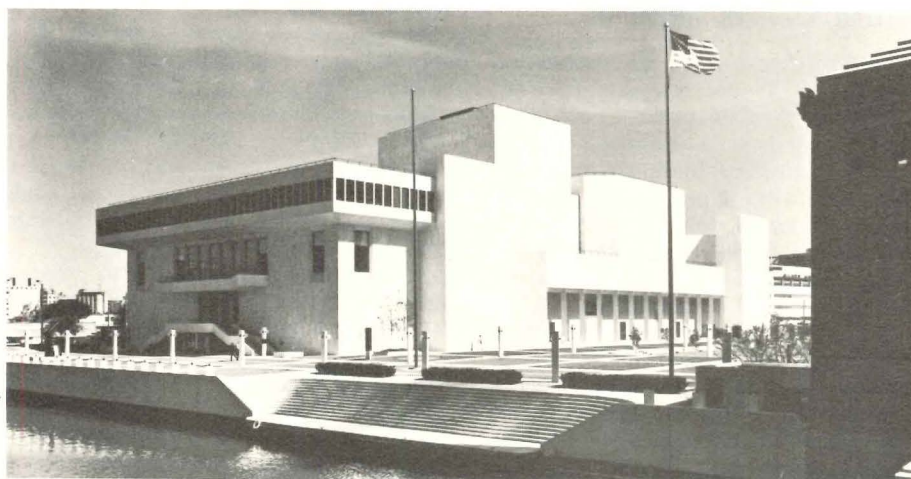
Bancroft Elementary School, William D. Warner, Architect



Bradfield and Emerson Halls, Ulrich Franzen, Architect.



Squaw Valley Cable Car Terminal, Shepley Bulfinch Richardson & Abbott, Architect.



Milwaukee Center for the Performing Arts, Harry Weese & Associates, Inc.

AIA Selects Honor Awards

Fourteen buildings were chosen this year from 478 entries. They are: Lake Point Tower, Chicago, Ill. (architect: Schipporeit-Heinrich, Inc., Chicago — associated architects: Graham, Anderson, Probst & White, Chicago); Herman D. Ruth Residence, Berkeley, Calif. (architect: Donald E. Olsen, Architect, AIA, Berkeley); Phillips/Brewer Residence, Chevy Chase, Md. (architect: Hartman-Cox, Architects, Washington, D.C.); Don M. Hisaka Residence, Shaker Heights, Ohio (architect: Don M. Hisaka & Associates, Cleveland); W. J. Milligan Vacation Residence, Sea Ranch, Calif. (architect: McCue Boone Tomsick Architects, San Francisco); Bradfield and Emerson Halls, Cornell University, Ithaca, N.Y. (architect: Ulrich Franzen, AIA, of Ulrich Franzen & Associates, New York, N.Y.); Bancroft Elementary School, Andover, Mass. (architect: William D. Warner, Architect); Lincoln Elementary School, Columbus, Ind. (architect: Gunnar Birkerts and Associates, Birmingham, Mich. — supervising architect: Sieco, Inc., Columbus, Ind.); Squaw Valley Cable Car Terminal, Olympic Valley, Calif. (architect: Shepley Bulfinch Richardson & Abbott, Boston, Mass.); Pedestrian Skyways, Minneapolis, Minn. (architect: The Cerny Associates, Inc., Minneapolis); The Whitney Museum of American Art, New York, N.Y. (architect: Marcel Breuer & Hamilton Smith, N.Y. — consulting architect: Michael H. Irving, New Canaan, Conn.); Milwaukee Center for the Performing Arts, Milwaukee, Wis. (architect Harry Weese & Associates, Ltd., Chicago); The National Collection of Fine Arts and National Portrait Gallery, Washington, D.C. (architect: Faulkner, Stenhouse, Fryer & Faulkner, Washington, D.C., — design consultants: Victor Proetz and Bayard Underwood, Cambridge, Mass.); The Cannery, San Francisco, Calif. (architect: Joseph Esherick & Associates, San Francisco).

The winners of the awards were selected by a jury composed of Francis D. Lethbridge, FAIA, Chairman, and Vice President of The Institute, Washington, D.C.; Edward C. Bassett, AIA, San Francisco; Nathaniel C. Curtis, Jr., FAIA, New Orleans; Hugh Newell Jacobsen, AIA, Washington, D.C., and I. M. Pei, FAIA, New York City. Arch. R. Winter, FAIA, Mobile, chairman of the 1969 jury, served as advisor.

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Case History of Community Drive:

Pico-Union Neighborhood Council (PUNC)

Two miles southeast of Los Angeles City Hall in the neighborhood of Pico Boulevard and Union Avenue is a community of 1700 low-income families, with 57 percent of the population Mexican-American. Since 1965 it has initiated a preschool program, a Head Start program, a day care center, a Teen Post, and now has designed, built, and will maintain Los Angeles' first vest pocket city park.

PUNC began as a grass-roots movement and took on strength through participation in the Goals project of the city of Los Angeles. What gave it the real glue was the threat of extinction. The new Convention Center going up at the east edge of the Pico-Union neighborhood has started land speculators sniffing around the 370-acre rundown area; and the city's proposal to widen Union Avenue would split the neighborhood in two.

What makes PUNC, which serves 12,000 residents, all the more extraordinary is that three-fourths of the people are renters. Moreover, only 9 percent of the 1252 dwellings are up to standard. Eighty percent were constructed before 1919, and 95 percent before 1939. Yet the fight to preserve the neighborhood is as highly organized (under the direction of Henry Marin) as Beverly Hills' opposition to a freeway route.

PUNC is grant happy. By 1968, the Community Redevelopment Agency had applied for a National Development Program grant for PUNC's first projects, and the same year they received the first technical assistance grant under the University of California Urban Crisis Program.

UCLA provided a series of workshop programs in education and planning as the first step in developing community expertise, and the UCLA Survey Research Center coop-

erated with PUNC to hire and train sixteen residents to carry out a household survey. The joint effort with UCLA also provided PUNC with a fulltime architect-planner, John Mutlow, who designed ten 3-bedroom houses for the community (and reviewed by the future occupants).

This year PUNC, with the help of UCLA, has started a broad economic and marketability study of the community. The rehabilitation of buildings (apartments and houses) begins late in the summer. CRA is buying existing buildings from absentee landlords and will sell them to PUNC; after rehabilitation they will be sold under an FHA program of low down payment and low interest rate to residents of the neighborhood.

Architect Killed in Plane Crash

Oscar Stonorov, of Stonorov-Haws Philadelphia, was killed in a private plane crash May 9 on the way to Black Lake, Michigan. Also in the plane was Walter Reuther of the United Automobile Workers. Both men were on their way to view the nearly completed UAW Family Education Center there of which Mr. Stonorov was the architect.

Born in 1905 in Frankfurt, Germany, Mr. Stonorov had had a practice in Philadelphia since 1931, and was associated with Louis Kahn for several years before forming a partnership with J. Frank Haws in 1953. Mr. Stonorov will be remembered for his work in public housing; he was active in the formation of the U.S. Housing Authority, urging legislation for federal funding of housing. In 1933 he designed the first federally funded housing project, the Carl Mackley apartments in Philadelphia.

Industrialized Housing Analyzed at Conference

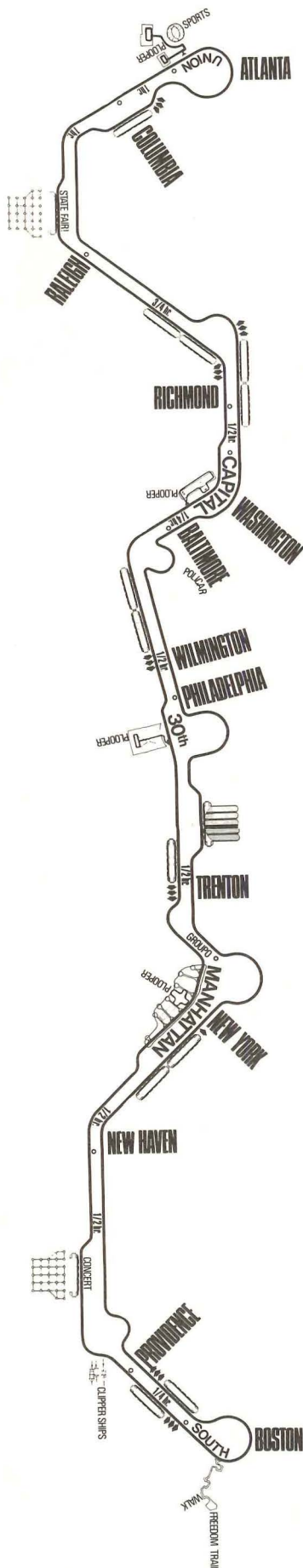
The Thirteenth Annual Urban Design Conference sponsored by Harvard University was held for the first time in conjunction with the National Urban Coalition on May 6-8. The topic "Housing: Mass Industrialization" focused on a number of issues: industrialized housing as a panacea for the housing crisis, obstacles preventing its easy implementation, and Operation Breakthrough as a program for solving these problems. Speakers included developers, contractors, businessmen, government officials, architects, and planners. Because of the national events occurring at that time, (Cambodia—Kent State) much of the program was disrupted by student rallies (in which some conference members took part), faculty meetings, etc.

Operation Breakthrough was naturally a topic much in discussion. Unfortunately most of the questions centered on basic elements of the program with which the audience did not seem to be very familiar (obviously, they had not read their April P/A yet). The most valuable comments may have come from Ezra Ehrenkrantz who called for user-need requirements to be studied in detail where they relate to decisions made about systems housing. Also as he further elaborated, "systems" technology could change the ways the resources are *applied*: systems housing has less to do with the actual technology and more to do with ordering a total process to satisfy the housing needs.

The conference's final event was to have been the "Gropo Fest" in honor of the late Walter Gropius' birthday. Because of the political atmosphere the party seemed out of order and therefore was postponed to May 18 (Gropius' real birthday). The theme of the party was "Something Metallic," the name of a similar Bauhaus festival at Dessau in 1929.



Mrs. Ise Gropius welcomes guests at Grope Fest.



Polis '76 schematic diagram of the transit link.

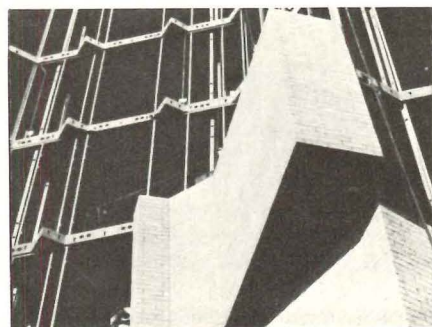
Last Minute Revisions in Bicentennial Schemes

With the promise of announcement this month of the proposed site/scheme for the 1976 Bicentennial celebration, various contenders have been working on last-minute additions to the proposals:

Boston: Boston's proposal for low- and moderate-income housing and permanent-use exposition facilities built on floating platforms in the Boston Bay (P/A, Jan. 1969, p. 48) suffered a setback when Louise Day Hicks (representing predominantly Irish Catholic South Boston) was elected to City Council. She persuaded other Council members not to endorse the project because it would add to the pollution of the waters (even though the program reportedly takes care of this danger). Some contend that her objections are really generated by the proximity of low-income development to conservative South Boston. Jan Wampler, chief designer of the scheme and head of the BRA Planning Design Group, and other participants on the proposal remain undaunted; they have come up with the additional idea of establishing a communications network in cities and towns across the nation to serve as focal points of local bicentennial celebrations, and to provide citizenry with information about important issues. Simple response machines would be included to register reactions of the people to various issues of public concern.

Polis 76: This proposal for a regional bicentennial celebration occurring in cities from Boston to Atlanta, and linked by a high speed ground transit system (P/A, Jan. 1970, p. 28), has been elaborated. A recent report considers continuity of movement from regional transportation lines through terminals and local transit nodes to street celebrations and historical sites (no pavilions please). Besides original participants Cambridge Seven and students Robert Hollister and James Chard, other persons have become involved along the East Coast including the October Group, architects, and Walker and Hodgetts, architects. Les Walker, Greg Matviak, and a group of CCNY students analyzed how Manhattan could be adapted for the continuous flow of transportation proposed by Polis. In regional transportation lines the back two cars of the speeding train disconnect before entering the city to make local stops. Traveling the length of Manhattan, they connect with seven cross-town spines (created by closing streets, with ga-

rages placed on east and west ends) where people-movers collect people and disperse them into the mass transit. The seven spines establish reference points for communities and are designed according to the particular patterns of each neighborhood. The recent proposal, endorsed by the American Federation of Arts, also goes into detail regarding how the bureaucracy and finances (with a Polis Board of Directors as the management and coordination group) will be handled.



One of the new methods selected for use by UDC: single wythe masonry wall system with high bond mortar by Dow Chemical.

UDC Cost Analog System

New York State's own Urban Development Corporation has committed itself to another giant step beyond its current programs that call for 25,000 housing units. It has announced a program whereby innovations in industrialized building techniques will be used in UDC construction to cut costs. At a point where Operation Breakthrough is recognizing the importance of aggregating the market to introduce industrialized housing, UDC realized it had an aggregated market: the volume-housing programs that provide builders the large continuing markets they require before investing in technological innovations.

Innovations immediately applied to UDC programs will include building products, systems, or subsystems judged according to design flexibility, cost-or-time-saving potential, proven technical validity, and immediate availability. Cost-and-time-saving potential is being tested by using the "Cost Analog System" developed by Tishman Research Corp. and Goody-Clancy Associates. The system uses a standard building as its basis of comparison. Components are categorized according to function, and new innovations are matched against the known cost of standard components they are designed to replace.

FOR WALLS MEANT TO BE SEEN- NOT HEARD: NEW WALLCRAFT.

Wallcraft is the new soft wall covering from E. T. Barwick Industries. Unlike most wall coverings, Wallcraft is made of densely tufted or flocked man-made fibers on durable synthetic fabric backings. It can be applied to almost any wall surface of almost any shape. Application may be at the site or prefabricated on wallboard or partitions.

Wallcraft is ruggedly long-wearing and easily maintained. Vacuuming or simple detergent sponging are usually sufficient for cleaning. Sound absorption is unusually high,

too. Wallcraft absorbs up to 50% of the noise that hits it. It meets federal specifications for flame spread of less than .25.

Beautiful. Durable. Economical. Easily maintained. There's never been anything like Wallcraft, the quiet one from Barwick. Consider its advantages for schools, offices, hotels, shopping centers, nursing homes. For details contact: Wallcraft Contract Interiors, Division of E. T. Barwick Industries, Inc., Chamblee, Georgia 30341.

WALLCRAFT CONTRACT INTERIORS / A DIVISION OF E. T. BARWICK INDUSTRIES, INC.



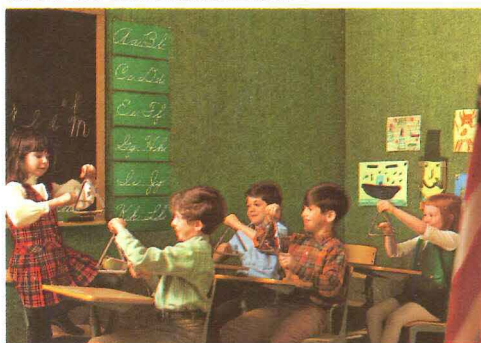
Fashionwall. (shown above and below) Tufted loop-and-sheared pile of Acrilan® acrylic fiber. The ultimate in design and texture. 15 colors; solids, tweeds, and stripes.

Softwall. (background photo) Level loop nylon tufted on an olefin back. 3/16-inch pile height. Available in five solids, five pin stripes, and five tricolor stripes. Medium price. For areas of high-frequency noise: restaurants, hotels, offices.

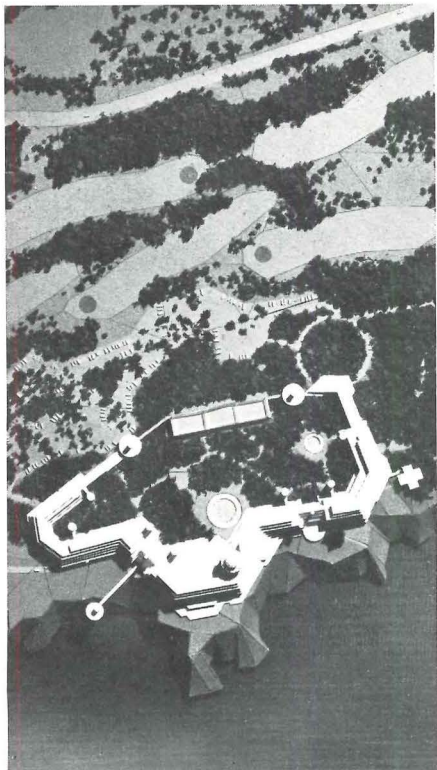


Veltron. 17,000 nylon fiber ends per square inch electronically flocked on an olefin backing. Available in eleven colors in your choice of a velveteen or crushed velveteen appearance. Recommended for high traffic areas.

Textra for economy. Needle-punch pile of 70% olefin/30% PVC. Especially suitable for schools, office landscaping, and shopping centers. Available in ten coordinated colors.



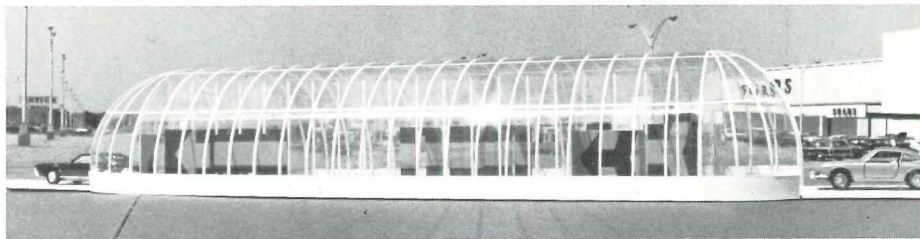
WALLCRAFT



Condominium

Newport, Oregon
Campbell, Yost & Partners, Architects

Three pools and four restaurants will grace this "antidote to urban neurosis," a fortress-like condominium complex situated on a bluff directly overlooking an isolated stretch of Oregon's coastline. From the air, the complex resembles a crab's claw grasping a string of tennis courts, surrounding a huge landscaped open space. The complex will be built in three sections, linked by glass-enclosed lounge areas to form a continuous structure. The "claw's" two pinners, each containing 150 vacation units, curve back toward the tennis courts from the oceanfront central-section, which provides an additional 200 housing units. Also occupying this central portion of the complex are a large indoor pool, service shops, restaurant, banquet hall-convention center for 3000, and a bar-restaurant tower. The building masses of the poured-in-place concrete structure will be scaled down by balcony projections, recesses, and differentiation of building heights. Access to the condominium units from above- and below-ground parking facilities is through elevators and stairways enclosed in glass wells. A closed passageway links the main structure to a cliff-top restaurant planned for the third phase of construction. All secondary buildings, a golf pro shop, and bridges and stair-towers connecting with the public beach are also planned for this final phase.

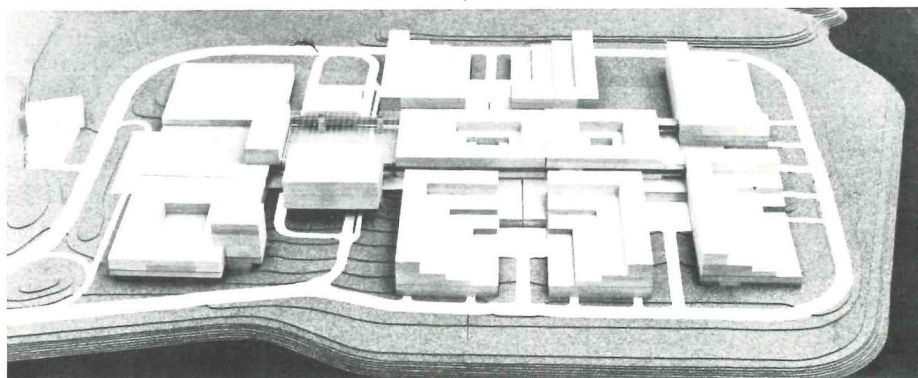


Spiffykleen Autowashing Machine

Suburbia, USA
Davies & Wolf, Architect

The medium is the message from Spiffykleen, a prototype carwash designed for Suburbia, USA, by Davies & Wolf. The machine is the housing, the housing the machine, and the design approach a light and clean environment of planned vulgarity. Harried housewives sealed in their grimy cars will drive past and under the brightly-painted graphic-decorated arches and blocks of carwashing ma-

chinery that form the façade. A transparent aluminum and plexiglass shell covers the equipment and a small office, where clients pay before running through the wash. The wash area extends the entire length of the structure, and is separated from the office and dry equipment by a transparent plastic screen. The carwash can be largely shop-made and delivered to various sites at a low cost and on short notice. Concrete foundations and utilities will be installed on the site.

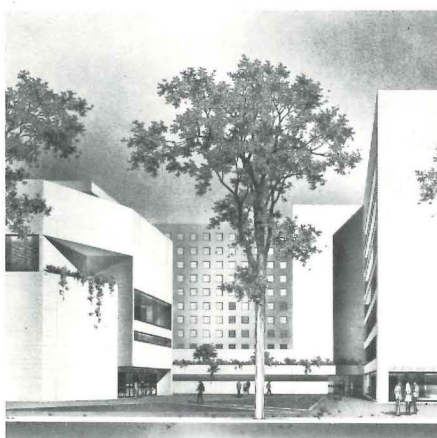


University of Massachusetts

Boston, Mass.
Sasaki Dawson and DeMay, and Pietro Belluschi, Associated Architects

The massed resources of a large university will be combined with the advantages of a small American college in the largest building project in Massachusetts' history: a \$355 million campus complex for the University of Massachusetts in Boston. The master plan for the 90-acre site facing Boston Harbor calls for 14 major

buildings accommodating 15,000 students, with final completion scheduled for 1980. A noteworthy aspect of the master plan has been that the campus will be designed and built for urban needs without upsetting urban processes. The site, a former garbage dump, was vacant to begin with, sparing the surrounding community the usual problems of displacement and relocation.



Third Church of Christ, Scientist Christian Science Office Building

Washington, D.C.
I.M. Pei and Partners, Architects

This four-story church and the seven-story office building will be reinforced concrete structures, terra-cotta colored and sand blasted for a smooth finish. Clear plate glass windows set in dark bronze duranodic frames lend contrast to the expanses of architectural concrete. The buildings will face each other across a landscaped courtyard by Sasaki, Dawson, DeMay Associates, Inc.

Money Concerns the Capitol by E.E. Halmos

Legislative Funding

Despite the display of concern over the economy and war in the Far East, Congress kept grinding away — still a bit ahead of previous years' schedules — at the major money bills.

There was still hope that many of the federal departments would be funded before the new fiscal year, 1971, is too far along (it started July 1). If so, there could be a big boost toward maintaining economic stability, since federal spending would continue at an even pace, without major interruption.

As summer started, the lawmakers had approved three of the annual money bills: \$1.8 billion for the Department of Interior and its "related agencies" (not including the Bureau of Reclamation); \$2.1 billion for the Atomic Energy Commission; \$17.2 billion for Housing and Urban Development, and the so-called "independent offices" (General Services Administration, Civil Defense, Federal Power Commission, etc.). None of the bills showed any serious changes from budget requests; the AEC money was 0.3 percent over budget, the HUD bill was \$210 million under, Interior got just about what it asked.

Of most interest to architects was the HUD bill. HUD itself gets \$2.929 billion — of which \$1.77 billion goes for urban renewal and housing assistance and \$575 million for model cities. GSA, the government's builder and housekeeper, gets \$724 million — up \$28 million over budget requests.

There were two other money matters of great interest: The bill (now signed into law) creating an "Airport and Airways Development Trust Fund" that will eventually gather \$16 billion (over 10 years) for airport and airway construction and improvement; and House committee approval of a Senate-passed bill (S3685) that attempts to bolster the badly-sagging housing industry by pumping new money into the mortgage field.

The housing bill (the Emergency Home Finance Act) authorizes the Federal Home Loan Bank Board to subsidize loans to savings and loan associations, in the hope of bringing down interest costs (rates were at about 8.5 percent in May on home mortgages); it would also order FHLBB and "Fannie Mae" to establish secondary markets for conventional mortgages.

There was reason for Congressional concern over economics, of course.

Construction work — always an economic bellweather — had obviously hit a plateau (running at an annual rate of \$90 billion, just about even with last year); housing was down to a point 21.6 percent lower than last year (when 1.4 million units were built); costs continued to climb; construction wage settlements (as reported by the Associated General Contractors) were running as much as 20 percent higher than a year ago.

There were a few faint signs of a reversal of the high-interest situation (mortgage rates dropped a fraction of a percentage point in May), but whether moves to ease the situation would be in time to hold up the market was the big question.

Contractors Meet on Money

Worried, on their own, about steadily rising costs of construction (and loss of control on the jobsite), some 350 contractors spent three days in Washington to consider "systems" construction and "turnkey" work. Net of their deliberations seemed to be that while the role of the various industry components (architects, engineers, contractors, subs) remains fuzzy in systems work — and will have to be defined before any real work proceeds — the idea offers hope of cutting costs. As to "turnkey" (by which the contractors meant design-and-build contracts), the field is growing fast, and might be the force that will dictate consolidation and responsibility to the industry.

Interestingly enough, the contractors seemed to be paying little homage to architects and engineers in their discussions. Most seem to take it for granted that such professionals would be part of the "team" — but probably as employees of the "turnkey" or "systems" contractor — not as independent segments.

SBA Aids Minority Contractors

The threat of the Small Business Administration appearing as an actual construction contractor became a reality in early June.

The objective is to aid "minority" contractors by having SBA negotiate subcontracts with such firms, on eased terms. The move is being fought bitterly by contractor groups.

GSA said it will make agreements with SBA on construction contracts ranging between \$2000 and \$100,000. SBA, in turn, will aid minority contractors by (1) requiring less than

customary performance bonds, (2) having GSA make progress payments directly to the subs, (3) making personnel available to help small firms improve their construction and management methods.

Contractor organizations fear that (1) SBA will soon seek contracts up to \$500,000 or more and (2) ignore the long-standing "lowest responsible bidder" procedures completely.

Personalities

Emilio Ambasz has been appointed Curator of Design at the Museum of Modern Art, Department of Architecture and Design. . . . **Harold Lewis Malt**, environmental designer of Washington D.C., was appointed as "expert" consultant to the Model Cities Administration of the U.S. Department of Housing and Urban Development. . . . **C. Ray Smith**, Senior Editor of P/A was elected to his third term as President of the U.S. Institute of Theater Technology. . . . **Dean De Von M. Carlson**, who has headed the University of Colorado School of Architecture since it was founded, announced his resignation as dean at the end of the next school year.

Calendar

Visual and Performing Arts and Higher Education Conference will be held August 3-7 at the Calvin College Fine Arts Center in Grand Rapids, Mich. The first annual, international, industrialized **Building Exposition and Congress** is now scheduled for November 3-6, 1970 at Louisville, Ky. . . . **The Society of American Registered Architects** is holding their 12th annual convention in Boston November 19-21.

Competitions

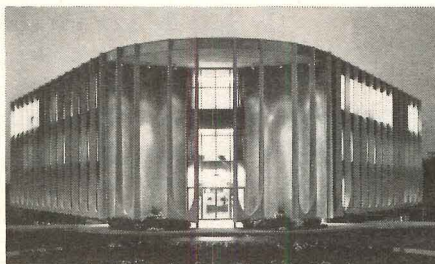
The American Institute of Steel Construction is holding the **1970 Architectural Awards of Excellence**. Entry forms may be obtained by writing the Institute at 101 Park Ave., New York, N.Y. 10017. . . .

NEWS PHOTO CREDITS:

- p. 31 Courtesy, Museum of Contemporary Crafts (middle)
Almut Imlau (right)
- p. 32 (Clockwise) Rondal Partridge, Julius Shulman, Becky Young, Balthazar Korab, Hedrich-Blessing
- p. 35 Irv Antler (top)
The Architects Collaborative (bottom)
- p. 38 Visual Interpretation Assistance (top left)



Architect John A. Benya must love All-Electric design. It gave him the freedom to design a heart-shaped bank.



John A. Benya won't build anything unless it's All-Electric—the most flexible approach to total environmental control.

The people at the Creve Coeur Bank in Creve Coeur, Missouri, bought this concept when they asked him to design a new bank. Now the town of Creve Coeur (French for broken heart) has an All-Electric bank in the shape of a heart. Two years ago Mr. Benya used the freedom of All-Electric design to build a football-shaped bank.

For the Creve Coeur Bank,

Mr. Benya used electric baseboard units plus supplemental heating units in the environmental control system. This system allows the bank to heat one area while cooling another. The system is totally flexible and it gives the freedom to expand the building when necessary.

Electric heat is clean. And there's no loss of energy because the source of heat is right in the room. So you don't lose heat transporting it down the line.

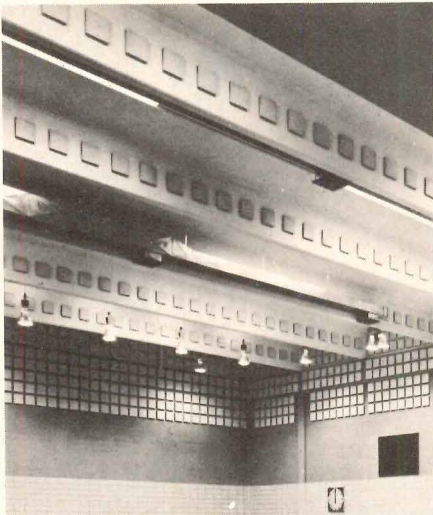
With these advantages, you can understand why so many commercial buildings are going All-Electric. Talk to your electric utility company today.



Live Better Electrically

Edison Electric Institute, 750 Third Ave., New York, N.Y. 10017

PRODUCTS & LITERATURE



Acoustic Glass

The Pittsburgh Corning Corp. is now manufacturing Geocoustic pads, acoustically absorbent units 2" thick x 13½" square, that can be applied to walls and ceilings. Recently installed in a gymnasium, the Geocoustic pads kept noise to a minimum during three simultaneous basketball games. Because they are constructed entirely of tiny glass beads, these Geocoustic units are not subject to rot or fungal growth.

Circle 100 on Readers' Service Card

Total Package Office Planning

The U.S. Plywood Corp. is now offering Contract Systems, a total interior design service, to businesses in the process of reevaluating or expanding their facilities. The Contract Systems service will include any or all of the following: feasibility analysis, a study to compile supportive data concerning the feasibility of using current facilities or expanding office space; mechanical facilities evaluation, a complete study of the present and future adequacy of electrical, telephone, and plumbing facilities; space planning, an analytical review of systems and procedures, personnel requirements, departmental relationships, work flow and space relationships; interior design, including color, texture, form, light, sound, space, and organization; furnishing and equipment, contracting prime suppliers for the best service and supplies; installation, the coordination of the construction of all phases of contract installation; additional services, storage and warehousing of facilities until installation; and leasing, an arrangement to lease the entire service should it be necessary.

Circle 101 on Readers' Service Card

Non-Asbestos Spray Fireproofing

The U.S. Mineral Products Co. has a direct-to-steel spray fireproofing that contains no asbestos. Asbestos released into the air during spraying can prove to be highly toxic to both workmen and passers-by. Cafco Blaze-Shield Type C/F is as effective a fireproofing material as its asbestos-bearing counterparts and has the added advantage of being suitable for air ducts because of its high resistance to air erosion.

Circle 102 on Readers' Service Card

Fiberglass Bathroom Components

Universal-Rundle is now distributing information on its three lines of bathroom fixtures: vitreous china, enameled cast iron, and fiberglass. Included in the U/R brochure is information on the Cabanabath, a four sided one-piece fiberglass-reinforced polyester resin Uni-bath. Universal-Rundle is now manufacturing a complete series of fiberglass bath modules.

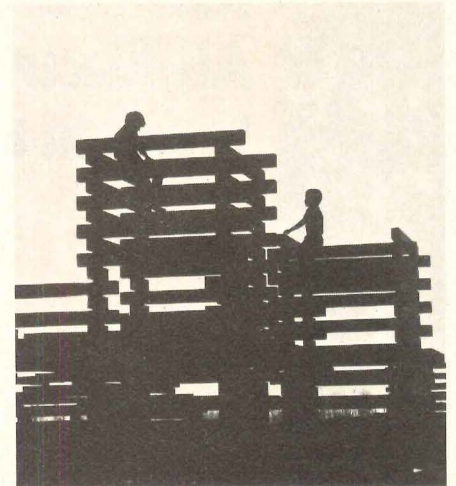
Circle 103 on Readers' Service Card



One Minute Parking

The Otis Co. (of elevator fame) is now producing a computerized, high-speed parking system. Primarily an underground system, Rotopark can provide up to 80 percent more parking capacity than normal ramp garages. Cars are parked and unparked mechanically. The system allocates a parking space, via computerized information; issues a key-punched ticket to the driver; admits a car to the parking booth; monitors with a fail-safe system the departure of the car's occupants from the booth; conveys the car to the space assigned by the computer. When the driver returns, the system computes and collects the parking fee, then delivers the vehicle in under 45 seconds.

Circle 104 on Readers' Service Card



Timber Playground Equipment

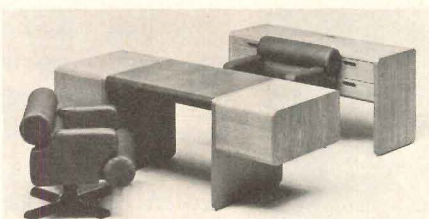
TimberForm, a systematic approach to creative play, tries to bring the active child closer to a natural form of outdoor recreation. The TimberForm playground units are constructed of 4" x 6" and 12" x 12" pressure-treated Douglas Fir or Malaysian hardwood, natural materials that provide a more natural playground.

Circle 105 on Readers' Service Card

A Grate Catalog

IKG Industries is offering its Gary Grating Catalog, a comprehensive collection of almost every grating type. The Gary Catalog illustrates welded steel, Galock I-Bar aluminum, rectangular bar aluminum, press locked steel, heavy welded steel, and a unique riveted design for both steel and aluminum. The 28-page brochure offers details, applications, and specifications.

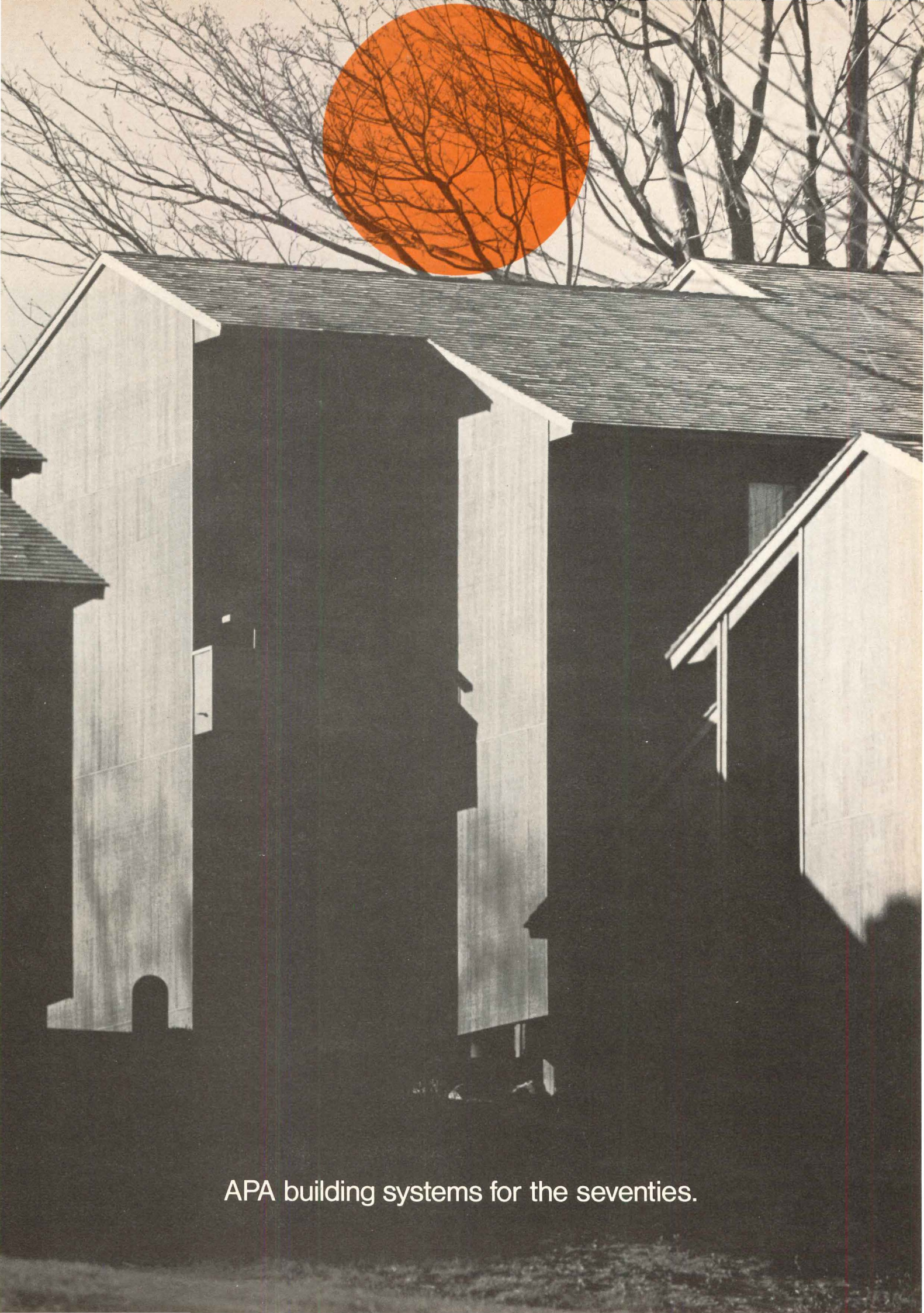
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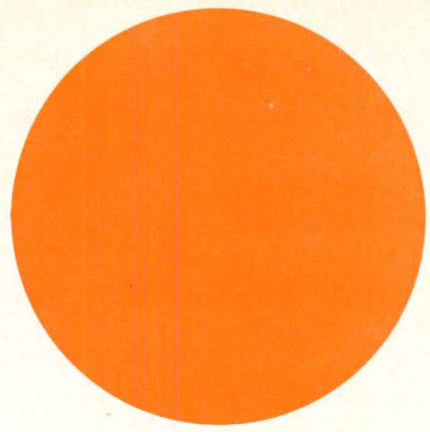
System I Furniture

A new line of executive wood office furniture has been introduced by Dictaphone Corp.'s Marble/Imperial Furniture division. System I was designed to integrate business equipment and hardwood office furniture. It includes two executive management centers, a secretarial unit, and an additional line of body-contour lounge furniture.

Circle 107 on Readers' Service Card
(more products on page 56)



APA building systems for the seventies.



The no-squeak floor is coming on strong. Quietly.

Plywood and glue makes stiffer floors for townhouses and apartments in Raleigh.

"By eliminating one layer of floor system, I saved on material and labor. By using 5/8-in. tongue and groove plywood on 2x8 floor joists, I'm getting a stiffer floor than I had with the 2x10's I used on other units," says J. R. Adams, of Adams-Bilt Homes, Raleigh, North Carolina.

That's what the APA Glued Floor System has done for his two-story, 70-unit apartment addition (left) and 370-unit townhouses.

The system consists, simply, of glue-nailing a single layer of plywood to wood joists.

Floor and joists are fused into a T-beam unit. APA tests (1 below) show the entire floor is stiffer. And joist size can often be reduced.

Properly constructed, APA Glued Floors can eliminate squeaks because the glue rather than nails carries the stress.

"2-4-1® plywood for glued floors makes a hell of a selling feature" in southern California.

The speaker: Carl A. Rudnick, now director of multi-family housing for Levitt & Sons of California, Inc.

The subject: several premium single-family homes he built as an independent southern California contractor.

"Thick plywood is impressive to customers. And 1-1/8-in.

2-4-1 gives them all the stiffness and resiliency they want in a quality floor. Cost-wise it works out to be competitive with concrete slabs.

"I don't get any complaints about floors squeaking, either. That's why I field-glued 2-4-1 in the home I built for myself."

Rudnick specifies tongue and groove 2-4-1 plywood on 4x6 girders 4 feet o.c. He first applies glue, then nails each panel with 8-penny barbed nails. He cross-blocks at each 4-foot section. Vinyl, parquet or carpeting goes over the plywood.

APA Glued Floor System cuts costs and callbacks in Columbus, Georgia.

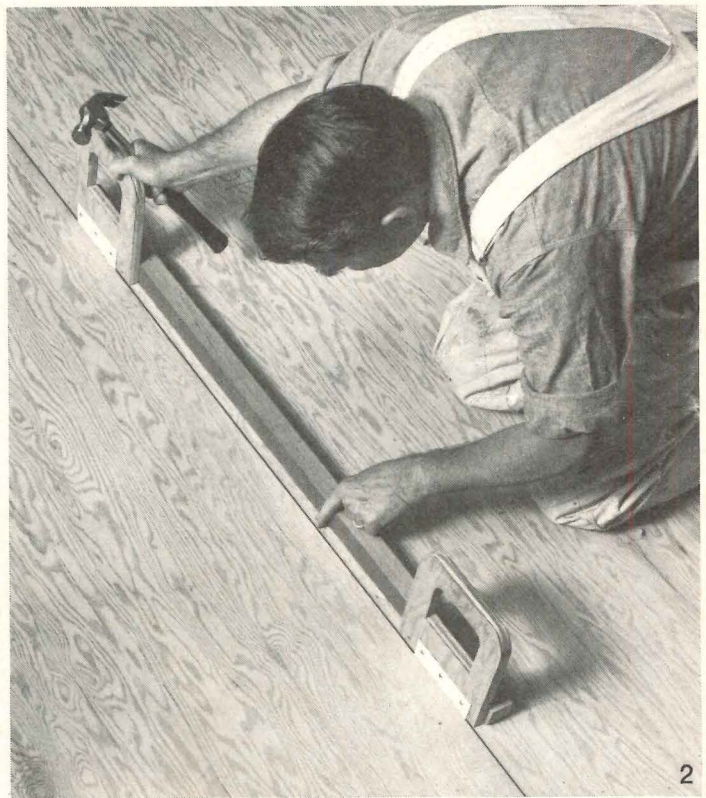
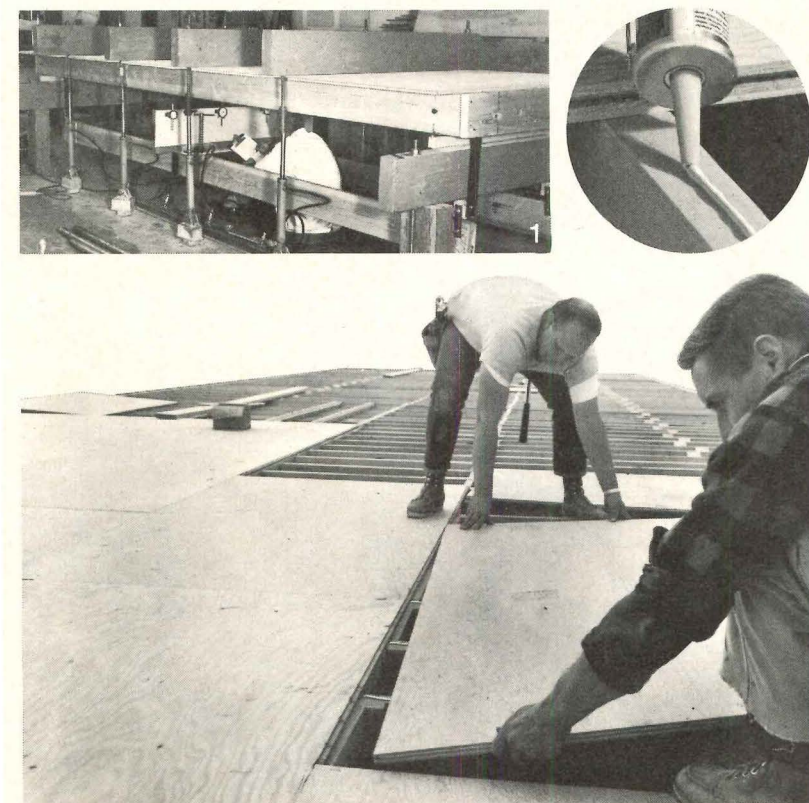
Contractor Bryan Rust, vice president of Hilton Builders, Columbus, Georgia, uses field-glued floors because:

"Glues made possible our changeover to the single-layer floor. And the system has kept floor defects to a fraction of what they were with conventional methods.

"Nailing problems are all but eliminated. And we only have to nail on 12-in. centers. With this time savings and a single-layer floor, our labor costs are much lower," said Rust.

Suggestion: Use of a hand-made spacer (2 below) assures a 1/16-in. gap quickly and consistently between end and side joints of panel.

"We couldn't have found a better way to put a floor together . . . for both cost and quality," he said.



For more information on the no-squeak floor, see back page of ad.



Textured plywood is more than just another pretty face.

Stained Texture 1-11® single-wall for low-income apartments in Seattle.

United Homes Corporation and architect Larry Metler prove at left that low-income housing can be a nice place to live.

The Cascade apartment project for King County Housing Authority "was built around the trees rather than over them," said Metler, of McCool-McDonald & Associates, Seattle.

Five-eighths-inch APA Texture 1-11 plywood as combination siding and sheathing was specified for cost and appearance. "We were satisfied with both," said the architect.

The single-wall construction with plywood siding nailed directly to the studs eliminates one application step.

Plywood was also used for the subfloors and roof sheathing, according to Preston Sherrod, job superintendent.

The 108 units are operated under a pilot turnkey "lease-back" program. United Homes built it; sold it to Mead Samuel and Co., Inc., which in turn leases it to King County Housing Authority. Rent is based on tenant income.

Stained Texture 1-11 single-wall for luxury condominium in Oakland.

Here's proof (1 and 2 below) APA Texture 1-11 plywood siding in a single-wall system can work as well for a sophisticated condominium as it does for the low-income apartment at left.

It's Hiller Highlands, an award-winning \$20 million, 67-acre

condominium community in Oakland, California.

Architects Callister and Payne specified T 1-11 plywood stained in basic earth tones of buff, brown and red.

Contractor was Weldwood, Inc.

Textured plywood as combination siding-sheathing can cut costs as much as 40 percent. It requires little maintenance. Takes staining beautifully. And comes in 40 styles.

Plywood inside and out creates quiet, beautiful dwellings in Port Ludlow, Washington.

Units of this condominium at Port Ludlow (Hood Canal) in Washington State sold for \$30,000 to \$47,000. They are part of The Admiralty Resort. (See cover and 3 below.)

Pope and Talbot Development, Inc., demanded premium construction. And got it:

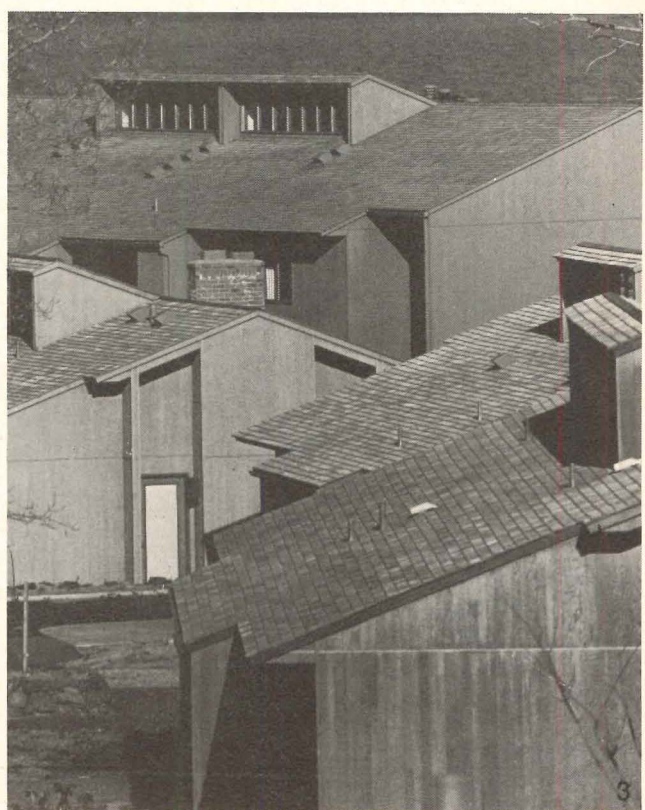
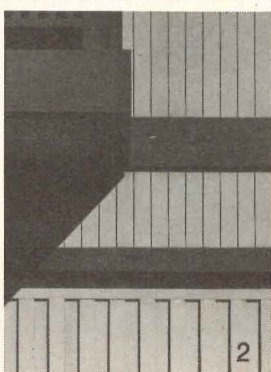
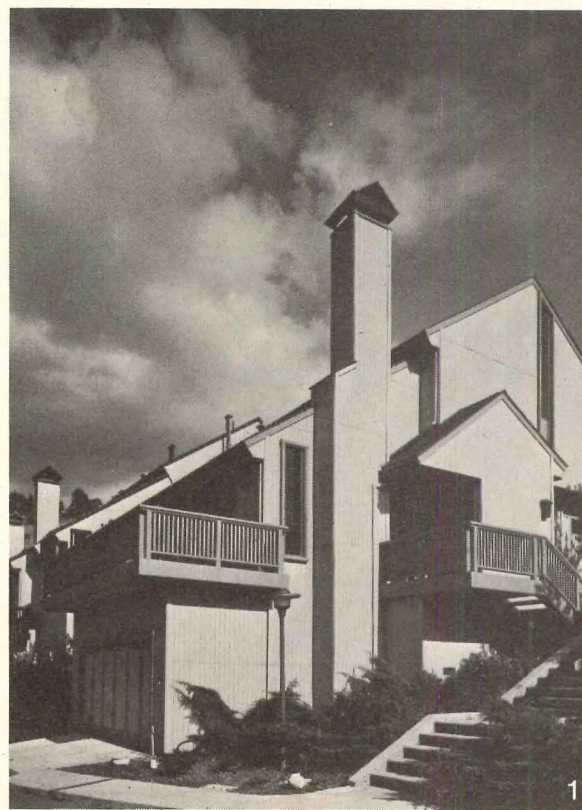
Siding is rough-sawn textured plywood, over plywood sheathing. The combination adds the warmth of wood and structural rigidity — plus a good sound barrier for airborne noises from outside.

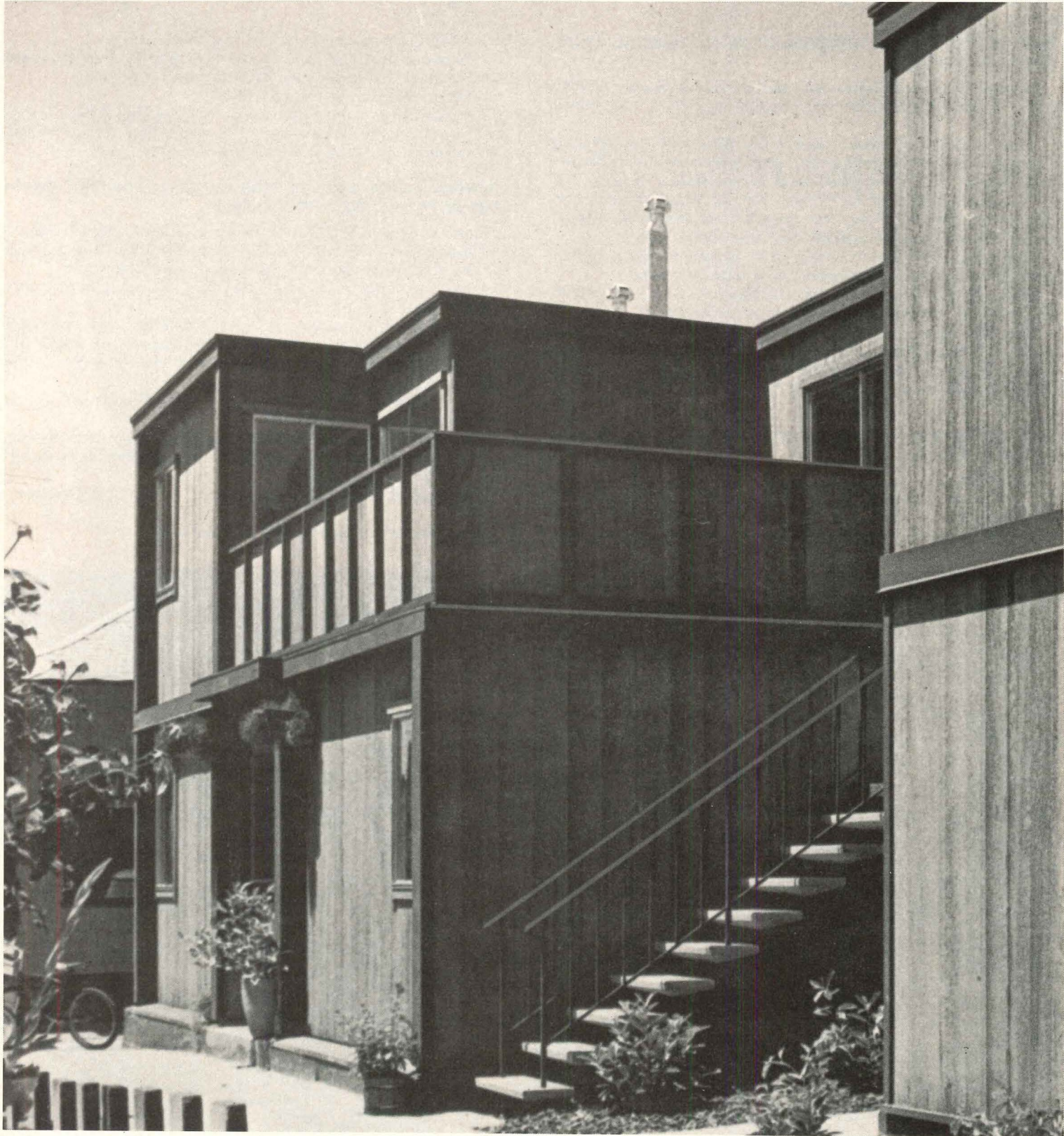
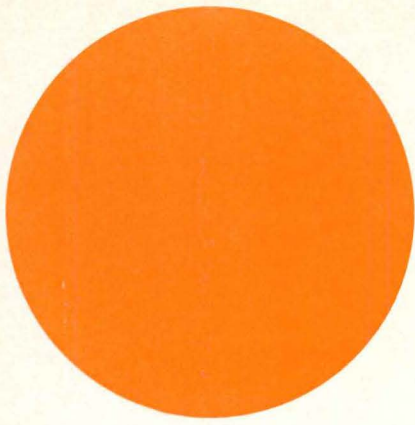
Cedar shingles over plywood roof decks offer further sound-deadening characteristics.

Plywood subflooring with underlayment gives firm footing and is an ideal base for sound-deadening resilient floor covering: vinyl and carpeting.

Architectural firm: Naramore, Bain, Brady and Johanson, Seattle.

Builder: Solie Construction, Bremerton.





Enter industrialized construction, hellbent for hurry-up housing.

Post and plywood panel components with a utility core in Berkeley.

The \$11.50-per-sq.-ft., two-family home at left is based on a patented building system which includes an entirely new joining method, plywood components, and a service utility core. It was developed by Technology Consortium, Inc., Berkeley, California.

Prefabricated plywood panels are insulated with polyurethane foam, joined to 4x4 corner posts anchored to the slab (1 below). Based on room-sized, rectangular cells formed of panels and upright posts, each post provides vertical support for respective ends of up to four panels. The system can be used for multi-story, detached, and clustered dwelling units.

Exterior walls are 3/8-in. plywood, with texture-painted sheathing grade plywood interiors. Floor panels are polyurethane core skinned with plywood on top and bottom.

The utility core is pre-assembled, delivered to the site as a unit and anchored in place.

How student housing stacked up at the University of Massachusetts.

Modular, wood-framed plywood housing for married students at the University of Massachusetts cost \$12 per sq. ft. including everything but land.

The factory-produced modules were prefabricated at Guerdon Industries' Magnolia plant, South Hill, Virginia, and

trucked to Amherst, Massachusetts. Plywood's diaphragm strength and nail-gluing helped them take the jolts of the 800-mile haul.

Exterior siding and key interior walls and ceilings are textured plywood. Fold-up roofs are stressed skin plywood panels with finished roofing. Removable panels permitted on-site inspection of mechanicals (diagram 2/photo 3 below).

Architects are Armstrong and Salomonsky, Richmond, Va. Developer-owner is Glen Development Co., Washington, D.C.

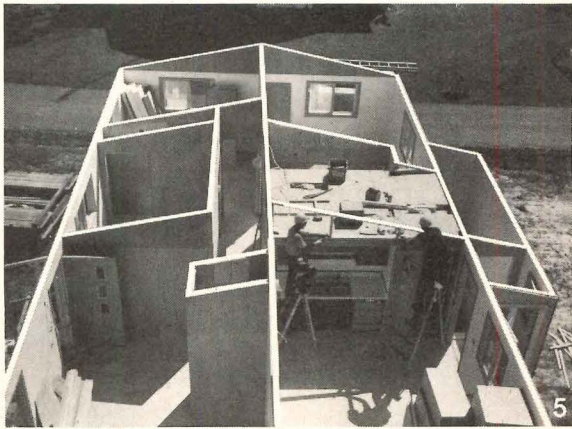
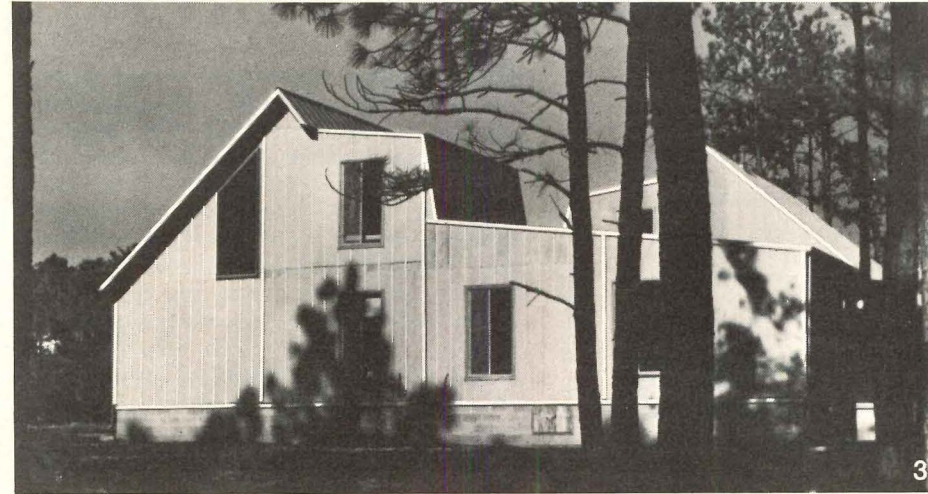
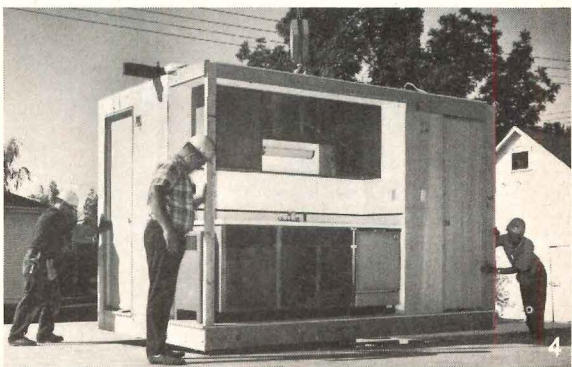
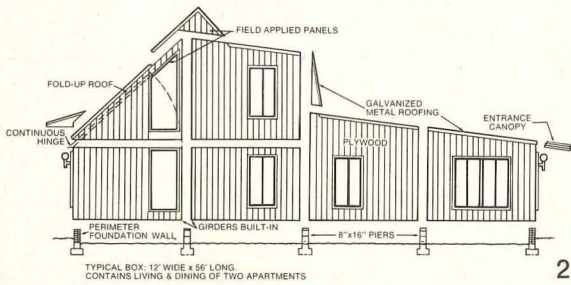
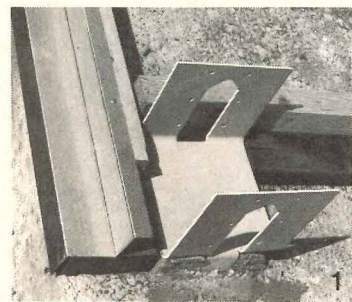
High volume assembly line and glued components in Wausau, Wisconsin.

Schuette Brothers can turn out a completed, quality-built home in a single day. The homes range from \$6,000 to \$30,000 and 850 sq. ft. to more than 2,500 sq. ft.

Key to high production is a pre-assembled mechanical core (4 and 5 below), built on a stressed skin plywood pallet that becomes part of the floor system. Floor and roof components are fabricated in the factory. Plywood is electronically glued to the top and bottom of the floor joists to make stressed skin floor panels.

Roof panels are similar, but plywood is on one side only. Prebuilt plywood wall units are preprimed with one coat of stain.

Wausau also produces multi-family structures using the same assembly line procedures.



For more information on industrialized housing, see next page.

Get more facts on building systems for the seventies from the people who have been bringing you profitable building systems since the thirties.

American Plywood Association.

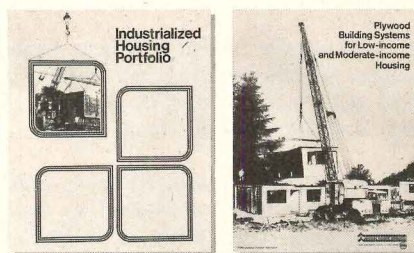
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APA Glued Floors

- Concepts 114—how to produce quality construction at minimum cost with APA glued plywood floors.
- Application Sequence Manual—how-to photos and information.
- 8 pages of case histories with diagrams, span tables, grade-use guides.
- Glue recommendations and equipment supplier lists.

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Industrialized Housing

- 6 new case histories in an industrialized housing portfolio.
- 28-page book on plywood building systems for low- and moderate-income housing.

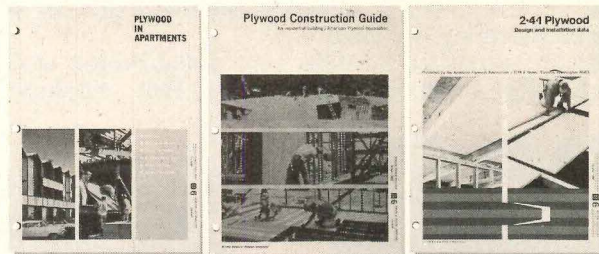
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Textured Plywood

- Portfolio of new ideas for textured plywood.
- Guide to plywood for siding, including facts on APA single-wall construction and manufacturers' lists.
- Data sheets on plywood siding.

Circle Service No. 311



Basic Construction Guides

- Plywood in apartments, with 8 pages of new data of plywood sound control systems.
- Plywood construction guide for residential building.
- 2-4-1 plywood design and installation data.

Circle Service No. 313

**American Plywood Association, Dept. CM
Tacoma, Washington 98401**

Please send me information packages on:

- ☐ APA Glued Floors
- ☐ Textured Plywood
- ☐ Industrialized Housing
- ☐ Basic Construction Guides

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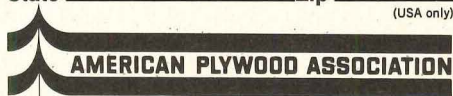
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Plywood quality-tested by the Division For Product Approval.

PA-070



The APA Story. American Plywood Association is a non-profit organization devoted to research, promotion, quality testing and inspection for more than 30 years. Included here are just a few examples of the timesaving, economical systems and products developed by APA over the years. You can depend on them, just as you can depend on the DFPA grade-trademark. Make sure every panel you buy or specify bears this mark. It means the plywood is subject to the rigid testing and inspection program of American Plywood Association. And that means you're getting the best possible plywood for the job.

One of a series presented by members of the American Wood Council.

TCS

Why coat stainless steel?

... because proper soldering of stainless steel requires an extra step of pretinning or use of corrosive fluxes. These fluxes must be removed after soldering to prevent attack on the stainless. TCS solders perfectly using a non-corrosive rosin flux. Pretinning is unnecessary.

... because architectural metals are subject to corrosive attack in severe chemical, industrial or marine environments.

TCS enhances the proven ability of stainless steel to resist corrosive attack under these conditions.

... because the reflective surface of stainless steel may sometimes be undesirable in architectural applications.

TCS weathers naturally to a predictable, uniform and attractive dark gray. If color is desired, it can also be painted.

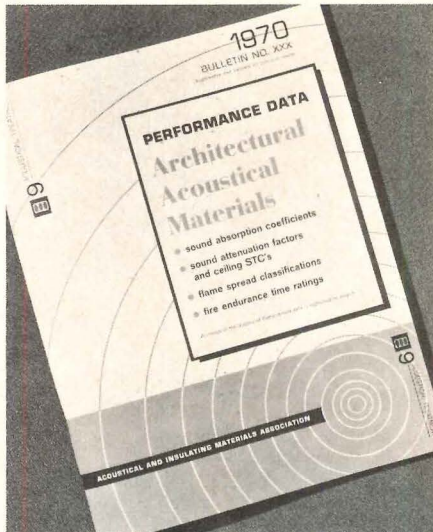
TCS, Terne-Coated Stainless Steel, is 304 nickel-chrome stainless steel covered on both sides with terne alloy (80% lead, 20% tin). It is a product of Follansbee Steel Corporation, Follansbee, West Virginia.

FOLLANSBEE

FOLLANSBEE STEEL CORPORATION • FOLLANSBEE, WEST VIRGINIA

PRODUCTS & LITERATURE

(Continued from page 46)



Acoustical Materials Data

The Acoustical and Insulating Materials Association offers acoustical ceiling material performance data compiled in a 96-page manual. Includes sound absorption coefficients, sound attenuation factors, and ceiling STC's, as well as flame spread classifications and fire endurance time ratings.

Circle 108 on Readers' Service Card

New Graphic Standards

A reference catalog (no. GC-170) presenting "a complete product family for the 3-D drafting field" is offered by Graphic-Standard Instruments Co. Directed primarily to the engineering draftsman and designer, it features isometric, dimetric, and trimetric drawing sets, and related products applicable to the 3-D drafting and technical illustration fields. Sample drawings are shown and time-saving techniques for making exploded views and other drawings are described.

Circle 109 on Readers' Service Card

Corrective Treatments for Concrete

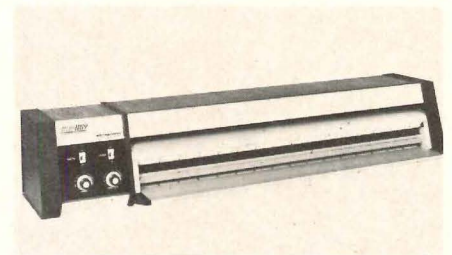
A 20-page catalog on waterproofing, restoration, decorative and corrective treatments for concrete and masonry is available from Standard Dry Wall Products, Inc. Contains detailed information on how the product is used to correct all waterproofing problems and describes concrete finishes, clear coatings, new texture finishes, and a product selector system.

Circle 110 on Readers' Service Card

Textured Metal Brochure

Six-page brochure describes capabilities and application for "Rigid-Tex Metals," a textured metal product produced by Rigidized Metals Corp. Also contains a descriptive summary, notes on fabrication, and an actual sample.

Circle 111 on Readers' Service Card

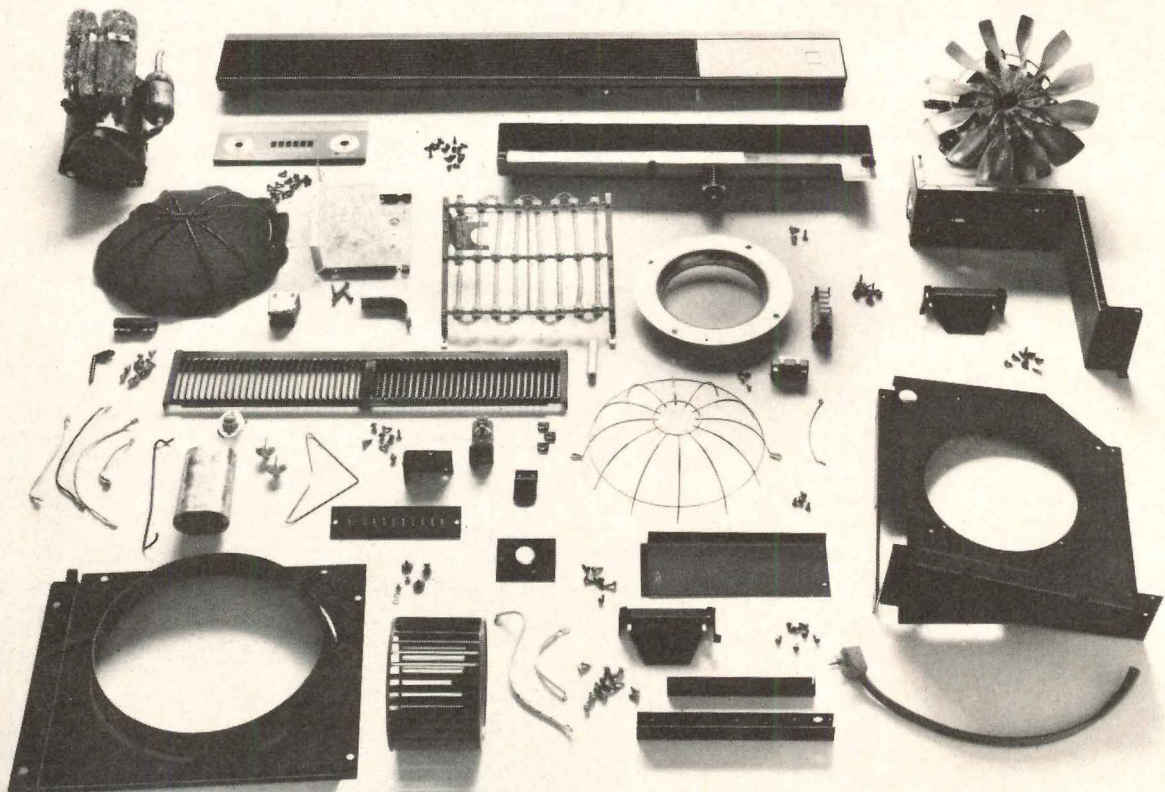


Fast Whiteprinting

The "Model 840" diazo whiteprinter, manufactured by Blu-Ray, Inc., produces 200 "D" size prints per hour. Other features include a built-in ammonia pump, portability, and a 42" throat. Dimensions: 60" long by 12" high by 16" deep. Weight: 126 lbs.

Circle 112 on Readers' Service Card

We made a few changes

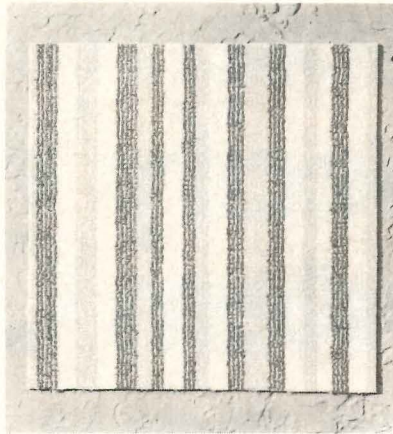


Inexpensive Underground Pipe Insulation

The American Gilsonite Co.'s 4-page brochure describes Gilso-Therm 70, a poured-in-place underground pipe insulation which offers a reduction in cost over conventional insulating methods. Gilso-Therm 70 insulation has a K factor of 0.70 BTU/ft² x F/in., an electrical resistivity of 10¹² ohm-cm, and a thermal range of 35-460 F. The services of The American Gilsonite Co.'s technical personnel are available for any piping problem. Circle 113 on Readers' Service Card

Outdoor Lighting

Sterner Lighting Inc. is offering a full-color looseleaf catalog of its creative lighting line. Over 150 pages of designs and specifications including Sterner's Modular Design Concept are included. To obtain a copy of the catalog, send letterhead request to Mel, Foss Sterner Lighting Inc., Winsted, Minn. 55395. Circle 114 on Readers' Service Card



Wallcraft

Barwick Industries, long known for tufted carpets, recently announced their entry into the soft wall covering business. Intended for use in commercial installations, the new wall covering will be sold under the Wallcraft label with marketing activities carried out through the new Wallcraft Wall Covering Division. Durable, with the added advantage of increased thermal and acoustic insulating properties, Wallcraft is available in 60 colors and a variety of surface textures. Circle 115 on Readers' Service Card



Beverage Service Center

The mini beverage refreshment center by Fountain Industries, Inc., serves freeze-dried coffee, tea, hot chocolate, chicken and beef broth, and potato soup. Every cup is freshly made to order, so there is no waste. The center has an 80-cup capacity, is thermostatically controlled, never needs cleaning, has disposable cart-ridges, and requires no plumbing. Circle 116 on Readers' Service Card

in our new Zonline heating/cooling unit.

We've made changes. Over 90 of them. Not just for the sake of change. To be better.

The new Zonline is quieter! We redesigned the air flow system and added a new two-motor fan system that automatically modulates air flow to cooling and heating requirements. We built a stronger room cabinet and gave it a urethane foam acoustical treatment for greater quietness.

The new Zonline is more rugged!

We're using heavier gauge metal in the outer case. The air/water seal has been laboratory tested in winds up to 75 miles per hour and the equivalent of 3 inches of rain per hour. This is rugged, heavy-duty commercial equipment built to withstand constant year-round usage.

And the new Zonline is beautiful!

Inside and out. From an exterior grille that can be integrated into the building design to the new optional simulated molded wood-grain finish of the interior cabinet, Zonline is new and good-looking.

All controls are concealed under a door on top where they are easily reached.

If you're looking for terminal thru-the-wall heating/cooling units, see the new Zonline for office, hotel/motel, apartment, school or hospital. Available in deluxe and standard models for 208 V., 230 V., and 277 V., and a variety of installations. See your General Electric Central Air Conditioning distributor right away. Or write the Air Conditioning Dept., Commercial & Industrial Sales Section, Louisville, Kentucky 40225.



Our new GE Zonline heating/cooling unit.

Progress Is Our Most Important Product
GENERAL ELECTRIC

Do you solemnly swear to specify Wade DWV System Cleanouts from now on?

Wade offers you the industry's most complete and dependable line of cast iron DWV system products. And that includes our line of Cleanouts.

There's a Wade Cleanout for any spec, any code.

And you can find out everything you need to know about Wade Cleanouts in the industry bible, the Wade Specification Manual.

It gives you complete product information. It gives you application details. And specs. And types. And it tells you about all the other DWV system products we make. Products that range from roof drains, to water hammer arrestors, to interceptors, to carriers and floor drains.

All these DWV system prod-

ucts are designed, engineered and manufactured to the highest quality standards by the Wade Division of the Tyler team. The team that makes everything you need for a total cast iron DWV system.

Things like cast iron soil pipe, No-Hub Couplings and TY-SEAL® Gaskets from our Soil Pipe Division.

Things like waterworks and municipal fittings from our Utilities Division.

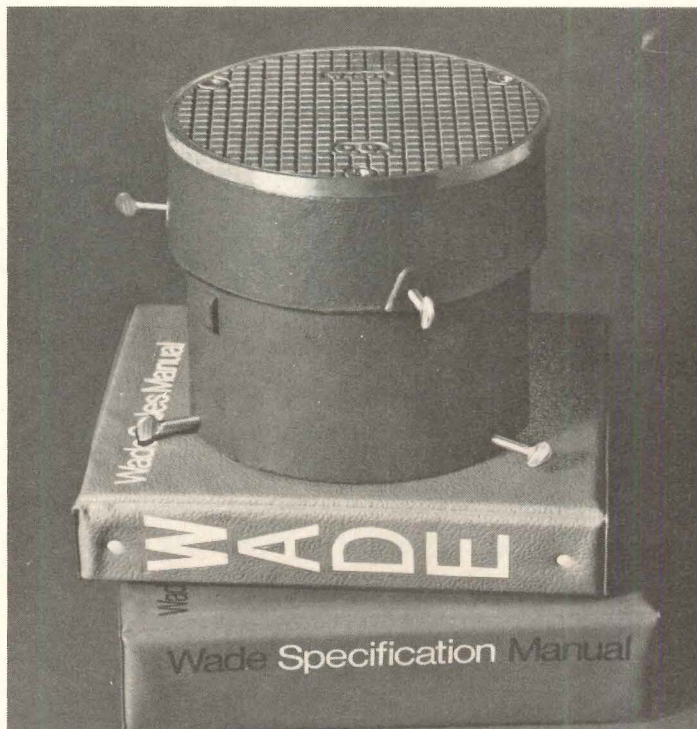
Next time, specify your DWV system products from the bible. To get your free, registered copy, simply write us on your letterhead.

If it goes into a cast iron DWV system, Tyler makes it.

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Ceramaguard offers excellent acoustical control, air-distribution capabilities, and rated fire protection. An Armstrong architectural representative is in the best position to tell you more about Ceramaguard and the wide range of other Armstrong Ceiling Systems. For his name and a copy of our Ceiling Systems folio, please write Armstrong, 4207 Watson Street, Lancaster, Pennsylvania 17604.

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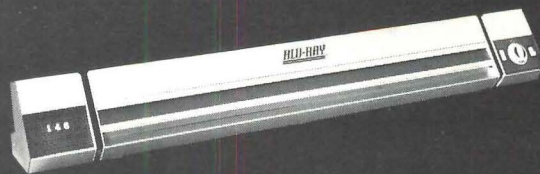


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Blu-Ray's low cost model 146 Whiteprinter

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Buy the one that outlasts the others.
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The concept is Swiss. Manufactured with care here in the U.S.A. by Harter/Lübke. And offered with your choice of chromed steel, oak, or walnut frames. Write today for your brochure.

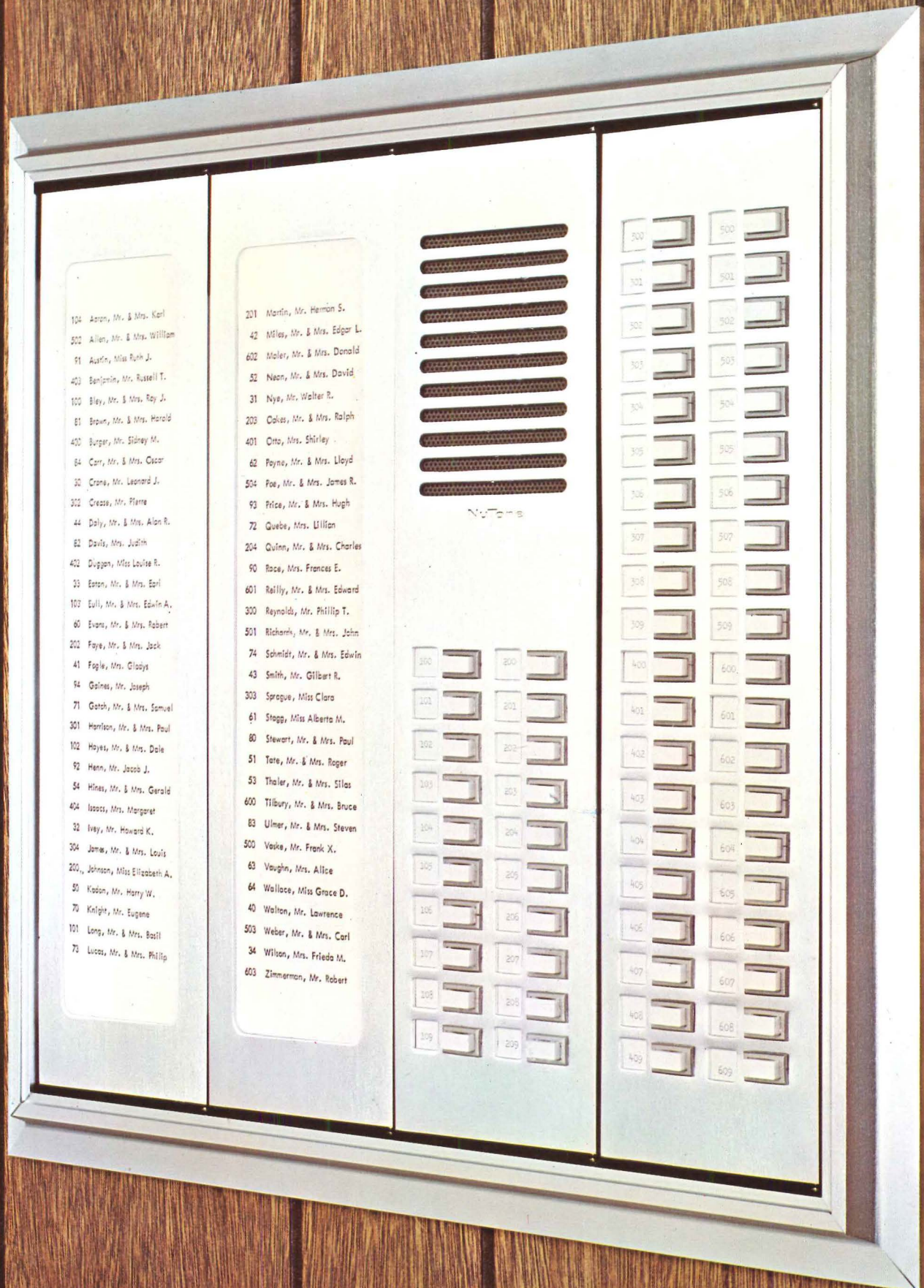


design: walter müller / karl odermatt / franz hero



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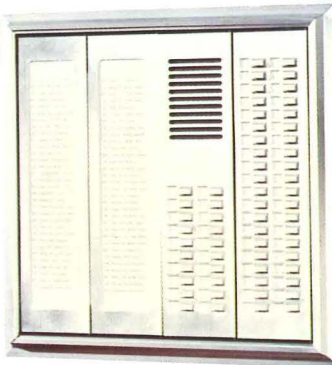
Conversation piece.



NuTone Direct-A-Com

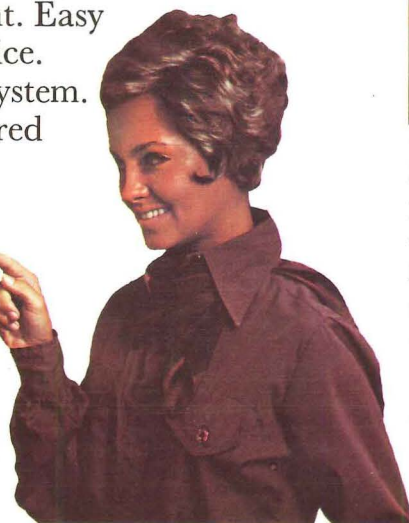
Conversation pieces...

NuTone lobby communications systems.



DIRECT-A-COM

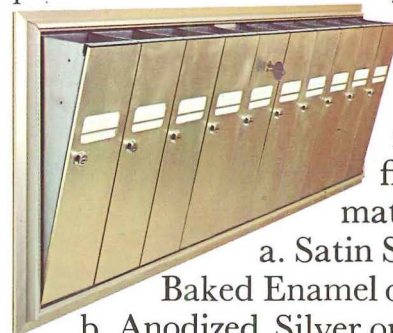
Here is NuTone's new Direct-A-Com Series 1. A better apartment communications system designed to meet today's needs of low and high-rise multi-family apartments. System features alphabetical name panels; "Auto Call" transfer system with busylight for buildings with two entrances; Post Office master lock door release. Also has minimum system wiring—3 common wires, one signal wire per apartment. System volume control for entire system sound level adjustment. Easy to install. Easy to service. All in all, it's a great system. Tenants can rest assured no one is going to bother them; no one passes without the tenant's permission. Direct-A-Com: door answering, plus control of entrance locks for privacy and security. It's a beautiful conversation piece.



MAIL BOXES
Perfect mates for the Direct-A-Com. These new NuTone boxes comply with current U. S. Post

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Available in standard groups of 3 to 10 compartments . . . if your building has more than 10 tenants, choose a combination of standard groups and have them arranged in single or double rows for as many mail compartments as you need. Entire group of mail compartments tilts out for easy mail deposit



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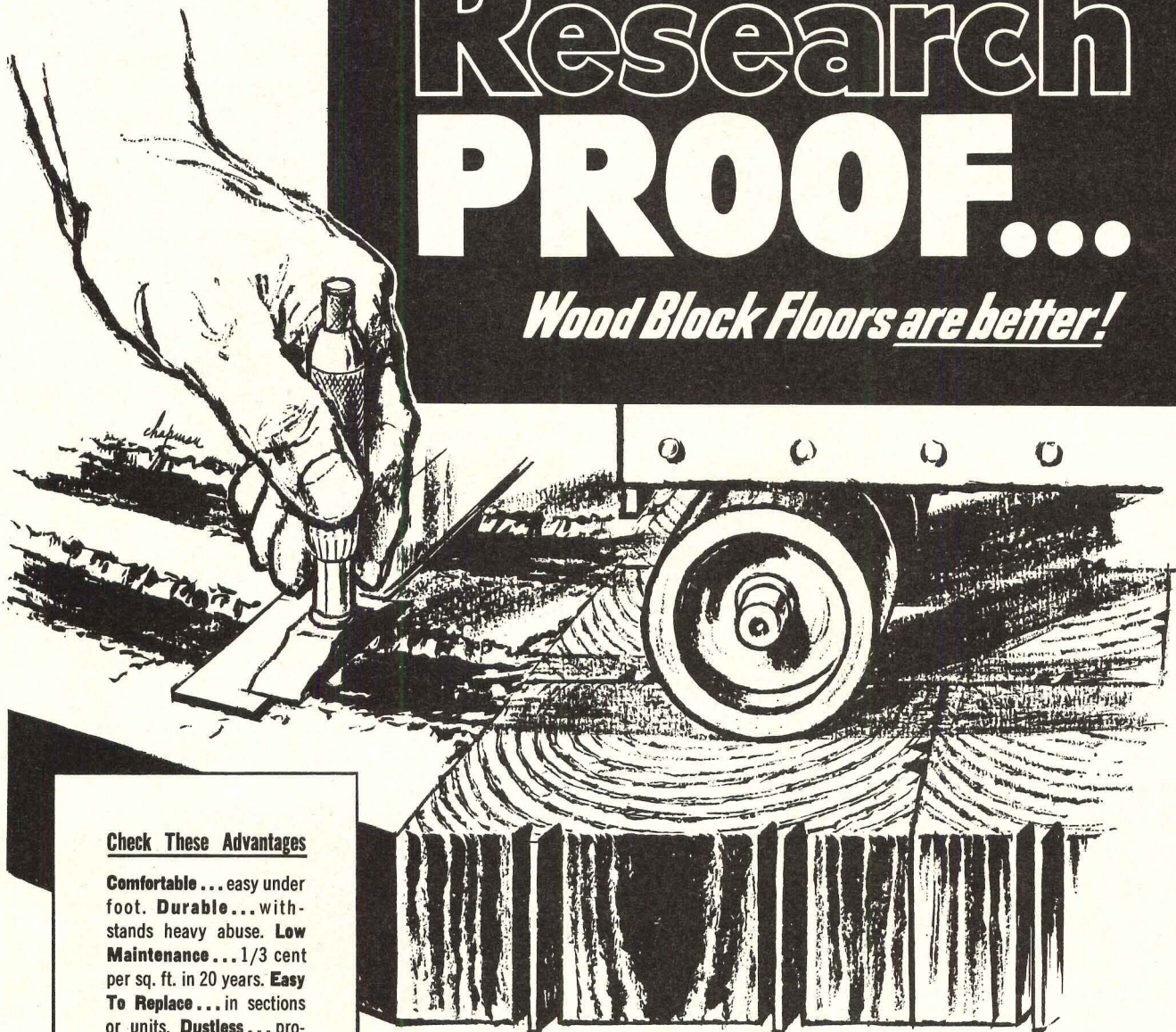
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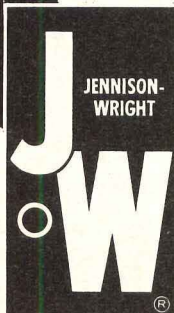
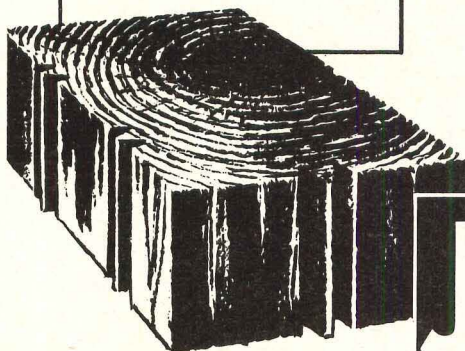
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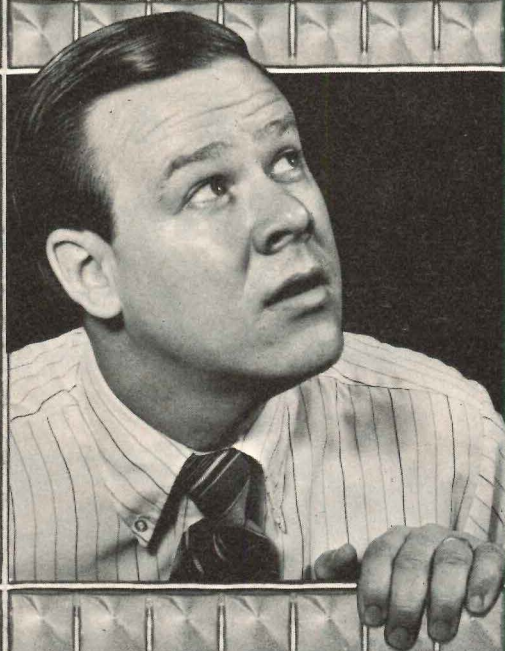
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A louver and a lens. It
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the glare control of prismatic.

The square-on-square design,
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creates a functional grid. It
reflects light back into the
panel, producing a soft new
look for modern interiors.

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are 1 x 2, 1 x 4, 2 x 2, 2 x 4.
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The newest in electric baseboard heating



Chromalox® Wood Grain electric baseboard heaters combine the warm, natural appearance of a walnut finish with rugged, low watt-per-foot construction.

These features make them ideal for complete or supplemental heating in nursing homes, dormitories, offices, stores or other applications where attractive appearance is essential and where hard usage is probable.

This specification grade, institutional model features vinyl laminate wood finish that blends with contemporary interiors. Yet the heavy gage steel construction helps the heater resist abuse.

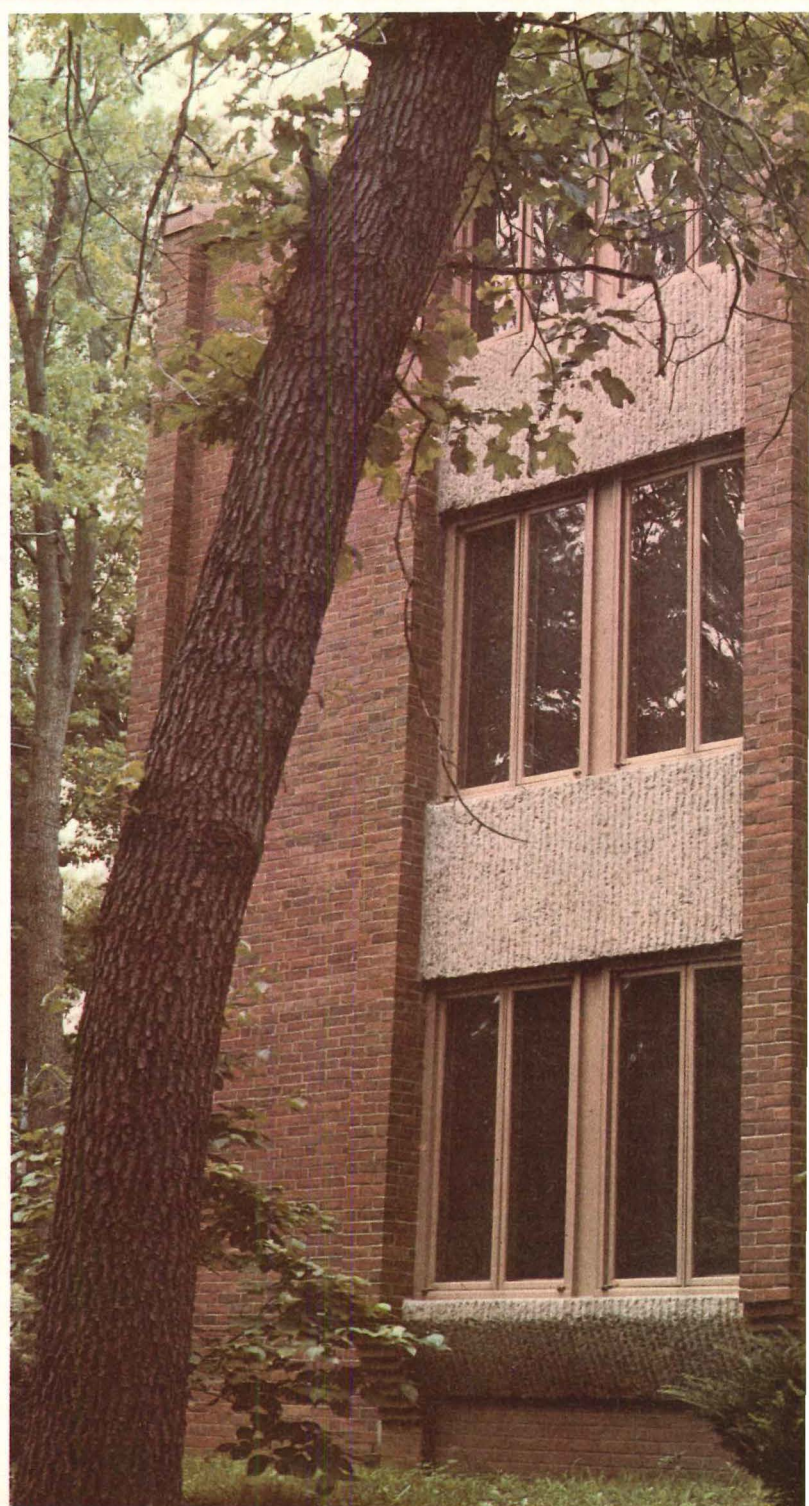
Seven standard lengths are available in a variety of voltages and wattages—twenty-seven models in all.

For complete information, see your Chromalox representative. Or write direct for Bulletin F50101.

WEC 112



EDWIN L. WIEGAND DIVISION
EMERSON ELECTRIC CO.
7748 THOMAS BLVD. PITTSBURGH, PA. 15208



How Andersen Windows helped Lasell Jr. College keep its Boston accent.

Lasell Jr. College for girls nestles quietly in the rolling west-Boston suburb of Auburndale—a heavily-wooded community filled with sturdy old New England “sheds” and genteel Georgian Colonials.

It was for this setting that a Boston architect designed a strikingly simple new dormitory and library.

It was for this setting that he chose Andersen Windows.

The natural beauty of our wood casements and awning-style windows worked in perfect harmony with traditional Boston brick.

In a quiet, stately way, Andersen Windows also helped the architect relate his new contemporary designs to the older campus buildings and surrounding private homes.

And finally, Andersen Windows appealed to the architect's plain old Yankee common sense. (Any windows that are built to such close tolerances that you get as much as a 15% fuel saving just *have* to make sense for Boston!)

Fact is, Andersen Windows make sense anywhere. For all the details, see your nearest Andersen distributor or dealer. Or check your Sweet's Catalog.

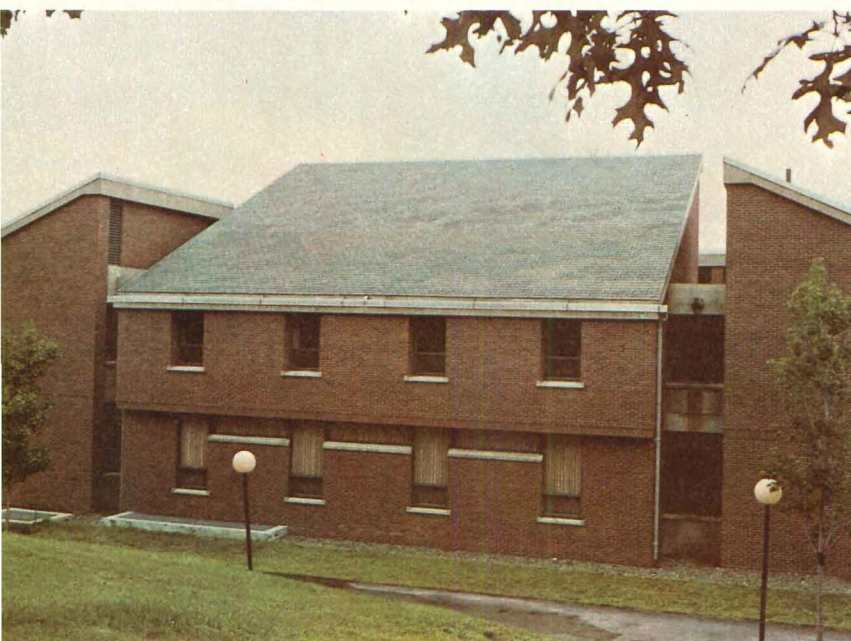
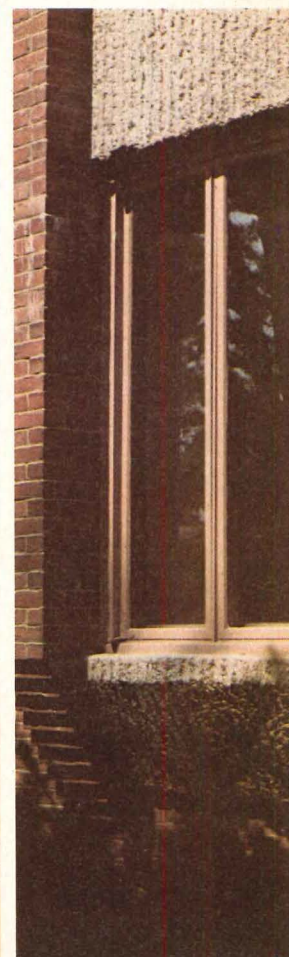
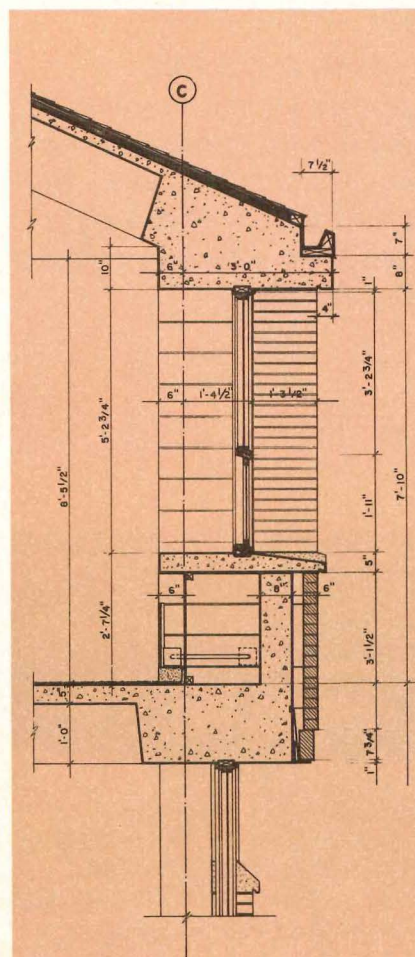
Architects: Steffian, Steffian and Bradley, Inc., Boston, Massachusetts



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New Steel Floating Floors® Panels have a top plate of 13 gauge hot-rolled steel continuous bonded to a uniform support grid.

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All Floating Floors systems are laterally stable, allow infinite access to underfloor wiring and are square and completely interchangeable. Vinyl, vinyl asbestos, plastic laminate or carpeted surfaces are available.

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SES® Units manufactured by Floating Floors, Inc. reliably hold room air temperatures within $\pm 2^\circ \text{F.}$, and relative humidity levels within $\pm 5\%$, 24 hours a day, 365 days a year.

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EDITORIAL

Advertisements For a Counter Culture, or alternative architectural means, is the major theme of this issue of P/A. The public notices that follow grew out of a conference held on March 20–22 at Freestone, California. They are presented as a reader service, exactly as written and designed by participants of the conference, unedited by P/A. The conference was attended by groups of West Coast architects, artists, designers, planners, political activists. The purpose of the gathering was stated by Sim van der Ryn in the invitation “to learn to design new social forms, new building forms, that are in harmony with life . . . to build a floating university around the design of our lives.”

Counter culture, options, alternatives, change — call it what you will — an increasing number of architects, planners, designers, teachers, artists, are searching for dimensions of their professions outside of what they feel are the narrow limits imposed by an increasingly restrictive society.

Protest today is not, as in the past, restricted to demands for economic advantage or political power. It centers, instead, around the demand for other relations among men and it strikes at the very root ideas from which our society grows. It is often unorganized, anarchistic, and irrational. The chief protesters, the revolutionary young, must mature before their priorities fall into place and clearly defined social goals develop. Yet, despite the chaos and confusion sparked by these restive youths, there are many who agree with Theodore Roszak when he says, “I am at a loss to know where, besides among these dissenting young and their heirs of the next few generations, the radical discontent and innovation can be found that might transform this disoriented civilization of ours into something a human being can identify as home. They are the matrix in which an alternative, but still excessively fragile future, is taking shape.”

The following pages reflect deep discontent with things as they are. We should be concerned when such options cease to be advertised, for it is when those who seek change despair of its realization that violence becomes inevitable. The public notices that follow are put forth to offer alternatives to our way of life, not to destroy it.

For those architects drawn toward science and

technology, there is a wealth of computerized tools to assist them in quantifying, aggregating, averaging man's needs into numerical values and his perceptual attributes into mathematical models. For the most part, they are not seeking revolutionary alternatives outside revolutionary technology. To them, betterment of the human condition depends on better technology and their concern, therefore, centers around its use.

But what has happened in this period of protest to that part of architecture that is fine art? Here are the architects who, fascinated by technical innovation, are profoundly distrustful of its prevailing goals. They see technology as a device able to expand man's consciousness rather than simply a means of increasing his material well being. As a result, there is little new of purely technical interest advertised on the following pages. However, there are very original uses of existing architectural technology. For example, the pneumatically tensed membrane becomes an “air pillow” put to uses Frei Otto and Victor Lundy would never have dreamed, and Buckminster Fuller's geodesic dome becomes a Zomework climb toy. At the Freestone Conference, technology became the stuff of fine art.

It is just as well. The traditional Fine Arts seem to have grown increasingly unworthy of public notice in these critical times. They lack the power to inspire or outrage. Such artists do whatever they like without causing much comment outside the small circle of artist, critic, dealer, and collector.

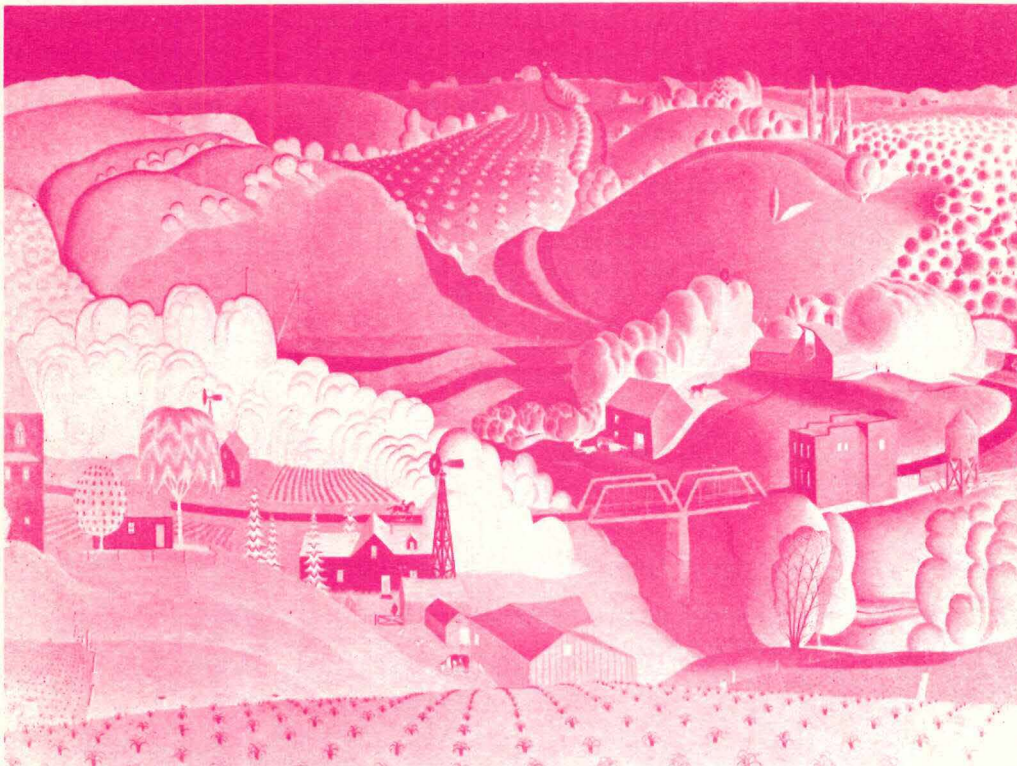
Whatever is important in the Fine Arts, in this era of protest, has been bequeathed to architecture. As André Fermingier, the French art critic, wrote in September 1968, following the French student upheavals, “There is doubtless little hope nowadays for painting, in view of what has become of it in the last few years. Perhaps painters will arise in the future, meanwhile all we can do is entrust art into the hands of architecture, which can still say all that is to be said if it avails itself of the means.”

The following pages that resulted from the Freestone Conference, advertise alternative architectural means. We urge our readers to take notice.

Forrest Wilson

Advertisements for a Counter Culture

FREESTONE



STONE CITY
JOSLYN ART MUSEUM, OMAHA, NEBRASKA
WOOD. 1892—1942

ing large inflatable balloon environments that are installed at rock festivals, student events, etc. Their lifestyle is much in keeping with West Coast thinking — that changing society starts with the individual and life is art.

Big Rock Candy Mountain: One of the satellite ventures of Portola Institute in Menlo Park (the experimental and experiential educational nonprofit research organization). The program is similar to that of the *Whole Earth Catalog*: a publication that provides tools and ideas to enable the reader to change his context. The difference is that the material will deal specifically with education, with content geared to the learner's and teacher's needs.

Whole Earth Catalog: A division of Portola Institute, it "provides information of useful tools contributing to a realm of intimate personal power of the individual to conduct his own education, find his own inspirations and shape his environment." The selection, heavily oriented to commune living and Buckminster Fuller thinking, closely reflects the tastes of its founder-editor Stewart Brand. Brand conceived of the idea in 1966 when he realized that of all the photographs of the earth taken in space flights, there were none showing it in its entirety. Later he thought of a truck store or access mobile that would travel to communes like a medicine wagon. When he eventually arrived at the catalog format he held on to the desire for commune-based readership and has never included information on items or projects that a few people cannot work with by themselves.

Earth Magazine: The Berkeley-based paper deals specifically with acting on the environment. Economics — setting up an alternative economy with economic self-determinism — receives much emphasis from editor Alan Robins.

Earth People's Park: This movement began in the West last fall with the idea of buying land in New Mexico or Colorado to create a Woodstock Nation. They are still ironing out the problems of undertaking such a venture (including the environmentalist criticism that they would be increasing the population density of the land out there and destroying its ecological base). At present the San Francisco- and New York-based organization is accumulating scattered sites in the West. The group is also working on other ecologically oriented projects, including sponsoring a "Live Access to Tools Show" in San Francisco where information, tools, and resources were presented.

Soft Kamakazi: Officially the Kamakazi Design Group, this guerilla graphics-organization was formed by Marc Treib, architecture and graphics teacher at Berkeley. The basic tenet of the group

is that the designer must be an activist and a participant; recently the Soft Kamakazi has been heavily involved in the student strike at Berkeley, turning out posters, advertising events, etc.

CIA: California Institute of the Arts has undergone a complete transformation with new deans, faculty, president, and curriculum; the Design School has behavioral psychologist Richard Farson as its dean (P/A, May 1970, p. 38). Associate Dean Craig Hodgetts and faculty member Peter de Bretteville, along with Craig's artist-brother Kent, and Leonard Cotrell (the son of the sociologist) are responsible for the galactic earth-work project shown in the following pages.

Notes on groups who were invited to the retreat and therefore are on the Interaction Diagram, but do not advertise:

Hog Farm: Not at conference. Amorphous New Mexico commune, with gypsy ethic and lifestyle; probably one of the most successful examples of this thinking.

Arch Frat: The architectural establishment.

Prog Arch. Guess who.

Aug Hum Int: Stanford Research Institute's Augmented Human Intellect Research Center. Man-computer interaction is being intensively studied in a situation where the research group becomes the subject group of the experiment.

Neil Smith: Architect, making films and designing a house planned to be perfect from ecological point of view.

Parnassus Institute: Led by John and Cynthia Nixon who teach at San Francisco State. Started education reform movement for universities: theory is that finding selves is the most important part of education. To do this, one must get to the internals, what is inside each person. Necessary to relive evolution of the human race for selves. They do this through theater.

Pacific School: A free high school in Palo Alto. Very progressive. Last year they were best known for sex and dope, but this year the focus is on building domes for kids to live in.

Bob Greenway: Teacher, educator, thinker. Lives on the farm where the weekend meeting was held.

Redwood School: Where Sally, Greenway's woman, teaches.

Arch 284: Sim's class at Berkeley. Has been working in public schools, helping teachers to find new ways of using space, equipment, and materials.

Canyon: Community south of San Francisco where some architects have built "substandard" homes, plywood domes, etc. Sim took 284 class there one weekend to build a dome. Because domes violate building codes, they have been ordered to be destroyed. Housing Law Cen-

ter (below) fighting it.

Housing Law Center: OEO funded. Sharp lawyers got together and set up an activist group of legal advocates for poor people on housing issues. They also act as developers — right now they are accumulating land. Not a legal aid society, they formulate test cases (e.g., Canyon) to fight right of building codes used against creation of new communities and new types of housing. They propose that registered architect stamp be sufficient for owner-occupied dwellings.

Cops Commune: Most powerful politically oriented Berkeley group. Active in rent strike, food conspiracy (a plan where neighborhoods get together and buy food — healthy organic foods, that is — and redistribute it themselves).

Mike Delacour: Berkeley political activist; not militant. Actively involved in rent strike and People's Park.

Frank Bardacke: Key Leader in People's Park, strategist, politician, publicist.

Ed Kirshner: Planning student working with Berkeley Tenants' Union and People's Architecture.

Harbinger: Newspaper commune.

Barr-Weisberg: Barry Weisberg, Director of Bay Area Institute, which has been studying effects of U.S. corporations getting involved in Asia economically and environmentally.

People's Architecture: One of the more politically involved architectural groups. Formed by four architects following People's Park confrontation in Berkeley, 1969, the group helps neighborhoods, organizations and individuals with planning and design modifications. Principally, consultants for money — activists for free. Strongly believe in squatter's rights and user development: a recent project demonstrates how an eight-block neighborhood that has been involved in rent strike (Berkeley Tenants' Union) can modify the physical character of the neighborhood to create its own desirable environment. Proposals include closing streets, opening up backyards, planting gardens, sharing recreation spaces, tearing down walls and partitions.

Ecology Center: Ecology group that runs bookstore in Berkeley, gets money from Stanford Research Institute. Tendency to be more conservative than Ecology Action, the first ecology group formed there.

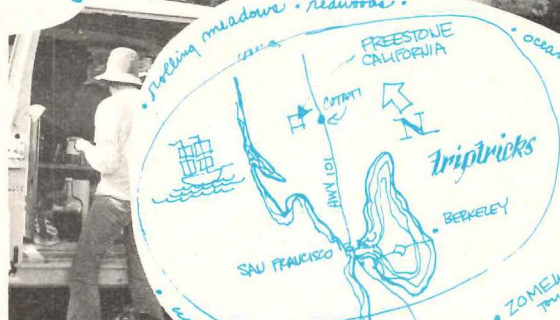
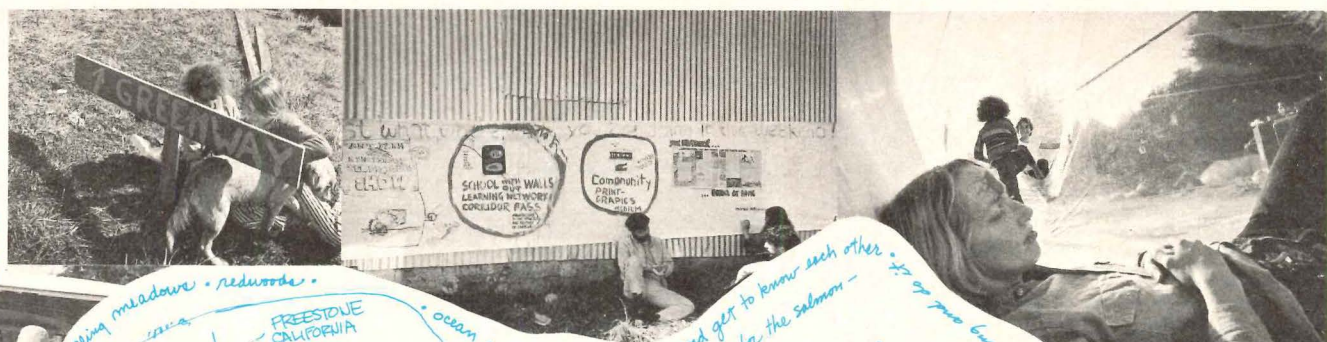
J. Brownson: Looking for land for a number of groups in San Francisco. Wants to get political balance of power in counties.

Haines-X Tribe: Refers to Sam Haines and his former affiliations with Berkeley Tribe.

Tony Serra: Ant Farm's attorney.

Thanks to Gordon Ashby for his help in gathering and putting the work together, and to those represented here for the time and effort they expended in preparing this material.

←FREESTONE



spend a few days and get to know each other - thanks to the fishermen for the salmon -

working, relaxing, others

hand cone miss conception

EARTH TRANSFORMER
BIG ROCK PARK
PEOPLES ARCHITECTURE
CANADIAN ALMAVIVE

PEOPLES ARCHITECTURE

C.I.A. show things

"shine" sun

energy

ZOMENWORKS
Trape and real stuff

GREENWAYS
First Prince and (peace)

house

food, drink, fire
long table

moving frog
gentle breeze

catting · sleeping · other

ANT FARM
playtime
music
good talks
children

water tank
wind mill

gate

sauna

CES PRINASSOS INST.
make, talk, meeting
all

KIDS ART
lots painting

energy

use gate or
sunlight of house

road to town
FREESTONE

no dogs

drive
spring back
and forth

WHOLE EARTH CATALOG

no heavy agenda

time
spring equinox
1970

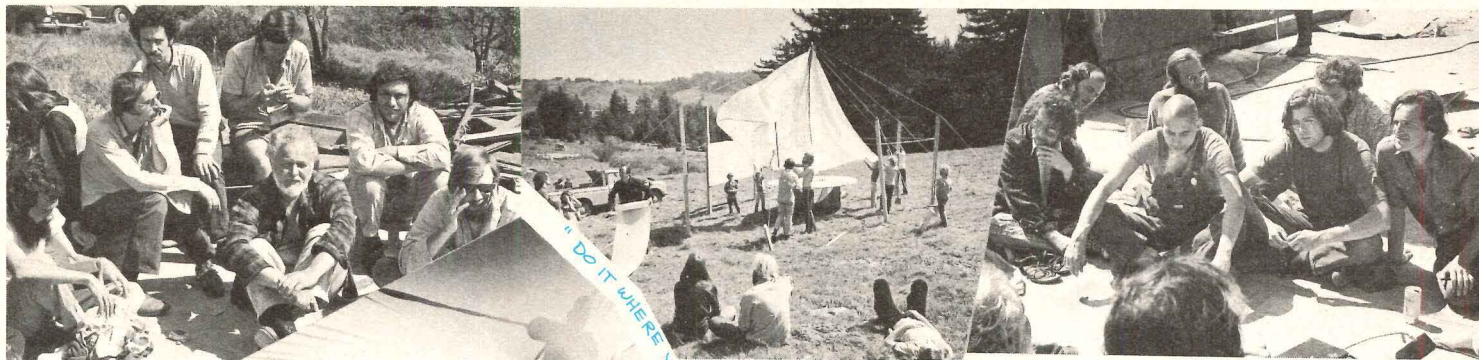
exchanging ideas · information · working · relaxing

but for the the sky there are

and

and

FREESTONE CONFERENCE SITE PLAN



LIFERAFT
440 Bohemian Highway
Freestone, California 95472

Help! I am sinking down the energy drain of Arki-tek-shure School. I want to join with you in creating a more real and satisfying alternative where I can learn architecture by doing it. I enclose fifty cents. Rush me a personally autographed LIFERAFT photo and other information.

Name _____

Address _____

CLIP A COUPON FOR ALTERNATIVES

THE HOWARD ROARK SOCIETY
440 Bohemian Highway
Freestone, California 95472

Hello! I am fed up with the AIA, fat cats, bureaucrats, beauticians, rhetoricians. Enroll me in an alternative professional society dedicated to Living Architecture. I enclose one dollar for Life Membership. Rush me my membership card, pin and secret handshake.

Name _____

Address _____

CLIP A COUPON FOR ALTERNATIVES

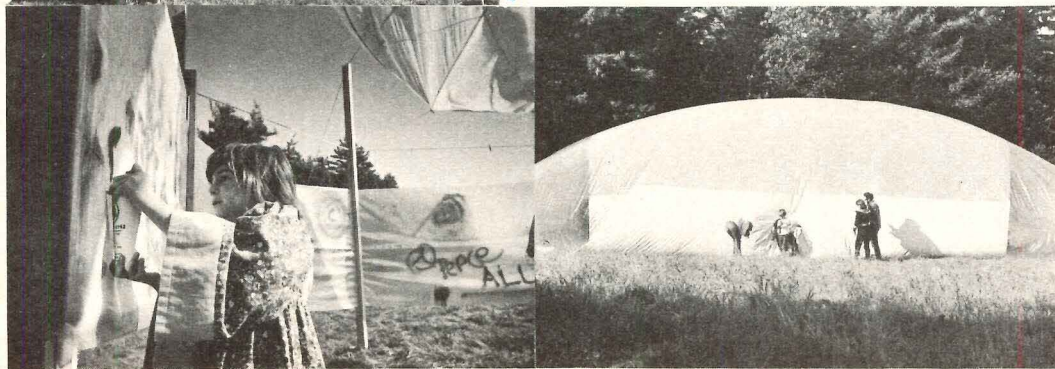
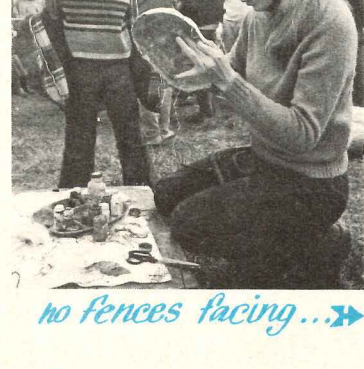
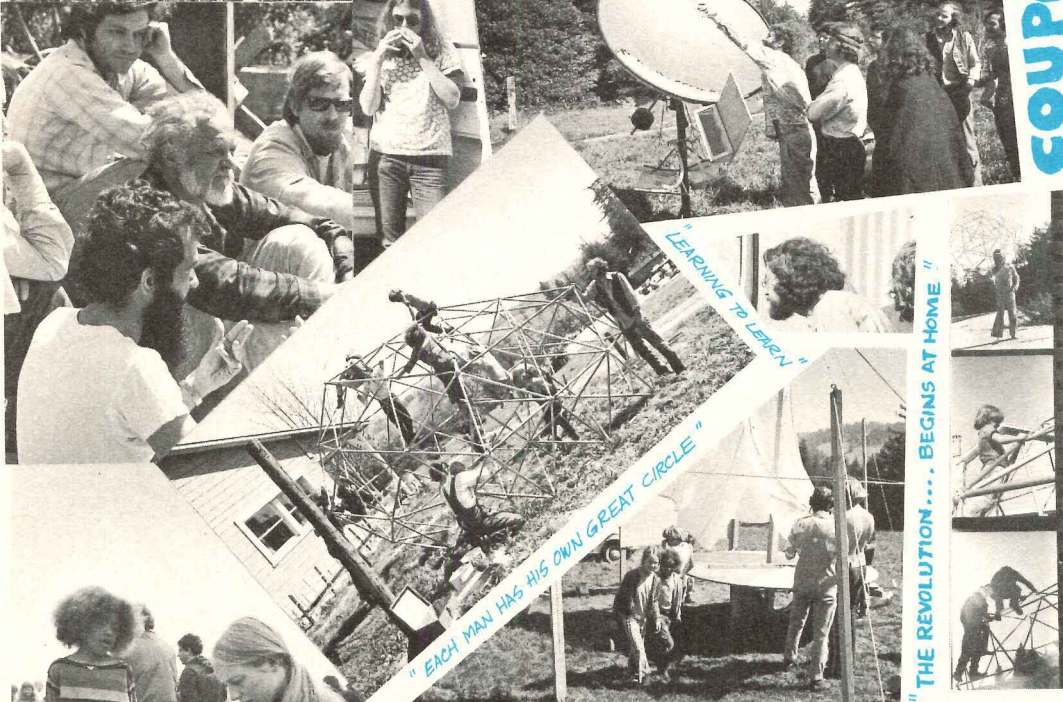
DIVCO DOES IT AGAIN
440 Bohemian Highway
Freestone, California 95472

The architectural tradepress is too light for me. I want an alternative media that gives me heavy information about building, people, the earth.

Name _____

Address _____

CLIP A COUPON FOR ALTERNATIVES

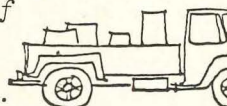
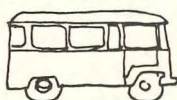
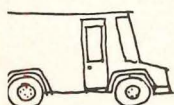


Pattern

REVERSE GARBAGE TRUCK

CONTEXT: A PRIMARY SCHOOL DISTRICT

SOLUTION: The truck: a vehicle that roams the region picking up scrap material for children's craft play. The truck makes regular rounds to schools, to drop off its haul, or to demonstrate its latest discovery. Sometimes kids ride around in the truck - turning it into a school on wheels - to make the pick ups.



PROBLEM:

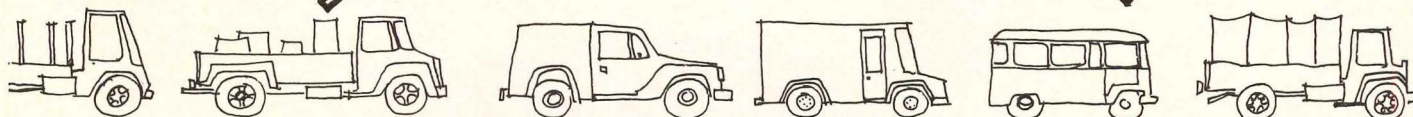
There is never enough material around schools which can truly enrich the child's learning/play environment; at the same time, throughout most urban regions, a fantastic quantity of scrap material goes to waste: paper, wood, surplus parts, gadgets, building materials, fabric, etc. Teachers are always having to go out on their own time and collect materials which will be new and interesting. The reverse garbage truck solves this problem. At the same time it provides a chance for children to go out on field expeditions - scavenger hunts - to find the material. The truck then goes from school to school letting teachers and children make selections from its latest finds.



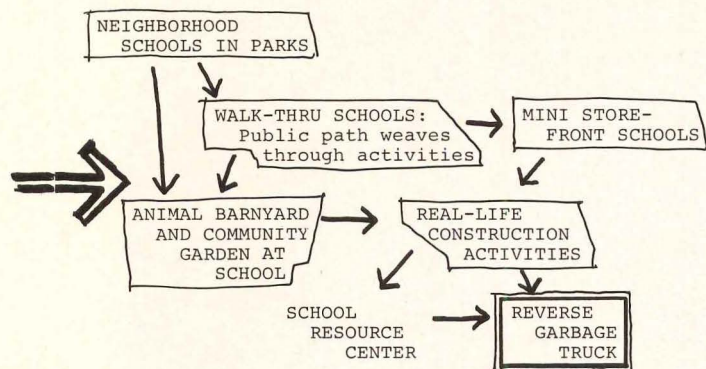


THE REVERSE GARBAGE TRUCK PATTERN WAS BORN AT THE FREESTONE CONFERENCE.

IT IS A REUSABLE PIECE OF DESIGN.



A PATTERN LANGUAGE IS A STRUCTURE OF REUSABLE DESIGN IDEAS. IT IS NOT A COLLECTION OF PROTOTYPES; IT IS THE GENETIC STUFF THAT DESIGNERS MUST HAVE TO GENERATE HUMAN COMMUNITIES.



now remember:
casement windows,
central fireplace,
horizontal lines,
roof is security,
nature in the house,
entrance transitions.



Everyone Has a Private Pattern Language Within Him

WE ARE BUILDING A COMMUNAL PATTERN LANGUAGE

ACTIVITY NUCLEUS . CENTRAL MARKET . LIGHT ON TWO SIDES OF EVERY ROOM
BUFFER ZONE BETWEEN HOUSES . OUTDOOR PLAY AREAS . OFFICE RECEPTION
DIRECT ACCESS TO ALL ROOMS . WINDOWS OVERLOOKING LIFE . POOLS OF
LIGHT . HABITABLE SMALL ROOMS . ONE WAY ARTERIES . STAIR SEATS
HAND CARVABLE WALLS . SEE THROUGH LIVING ROOM . WALK THROUGH SCHOOLS
CORE OPEN SPACE . OFFICE GYMNASIUM . ENTRANCE TRANSITION . OFFICE
FLEXIBILITY . INTIMACY GRADIENT . FRONT DOOR RECESS . DENSITY RINGS
PUBLIC ROOM . RURAL LEAPFROG . INTERVIEW BOOTH . KITCHEN-
FAMILY RELATIONSHIP . FARMHOUSE KITCHEN . LOCAL FORUM . MINI-
CORRIDOR NICHES . FAMILY ROOM ALCOVES . LOCAL CITY
HOOD SCHOOL IN PARK . VISIBLE KINDERGARTEN . WALLED
ON THE STREET . OUTDOOR SEATS . DISHSHAPED ARENA
COMMUNITY TERRITORY . CAR PEDESTRIAN SYMBIOSIS
POOLS OF LIGHT . CEILING HEIGHTS . SELF SERVICE
Y PROJECTS . TAPESTRY OF LIGHT AND DARK
H COMMUNITY . SUBCULTURE CELLS . WORKPLACE RIBBON
R EVERYONE . WINDOW PLACE . FACE OUT WORKPLACE
CENTRIPETAL PEDESTRIAN PATHS . LOOPED LOCAL
ANYWHERE . SMALL PARKING LOTS . ZEN VIEW



IF YOU CONTRIBUTE TO THIS LANGUAGE YOURSELF THE MORE POWERFUL IT CAN BE. SEND YOUR PATTERNS TO: CENTER FOR ENVIRONMENTAL STRUCTURE, 2531 ETNA STREET, BERKELEY, CALIFORNIA 94704.

(If You Won't Live In It — Don't Design It)

-- Thank you, Joshua Freiwald, Peter Leffe, and Ben Tarcher for your photos.

Canadian Whole Earth Almanac



An Almanac somewhat fashioned after the Whole Earth Truck Store and Catalog. Being put together by some of us from the Whole Earth Catalog.

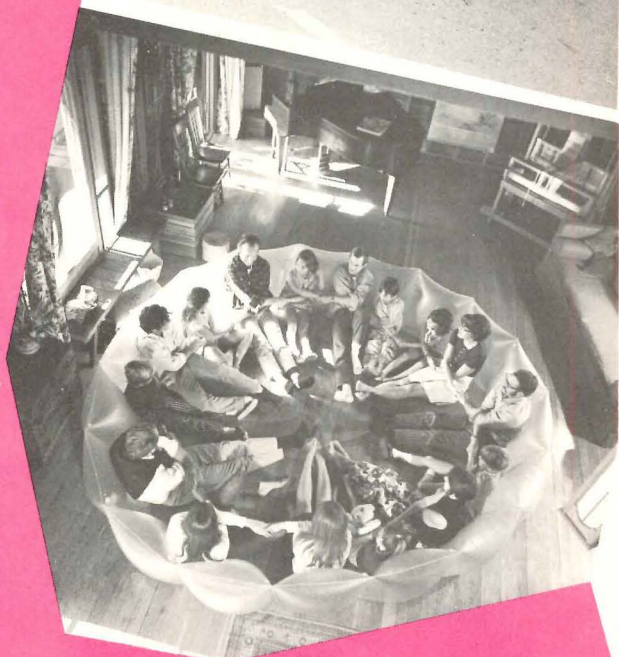
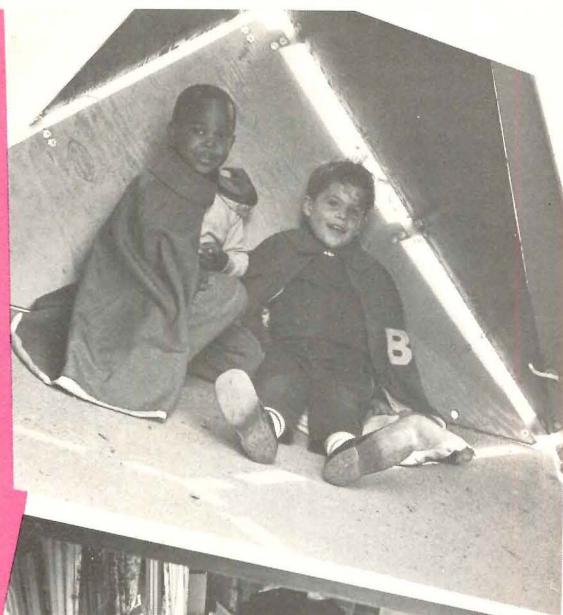
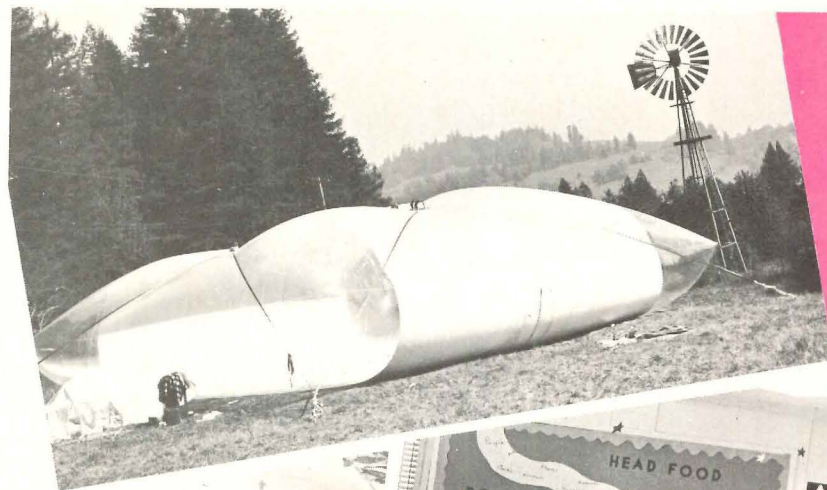
The Almanac will contain information, tools, books, etc. and their access, especially for the Canadian consumer. Access will be situated in Canada, British Commonwealth and elsewhere(?).

The Store and Almanac will be in Toronto. Almanac production may be done on a farm 350 miles east in Ontario. Independent co-op stores which will carry Almanac tools, etc. are now in the workings to be situated in Montreal, Vancouver and possibly Winnipeg.

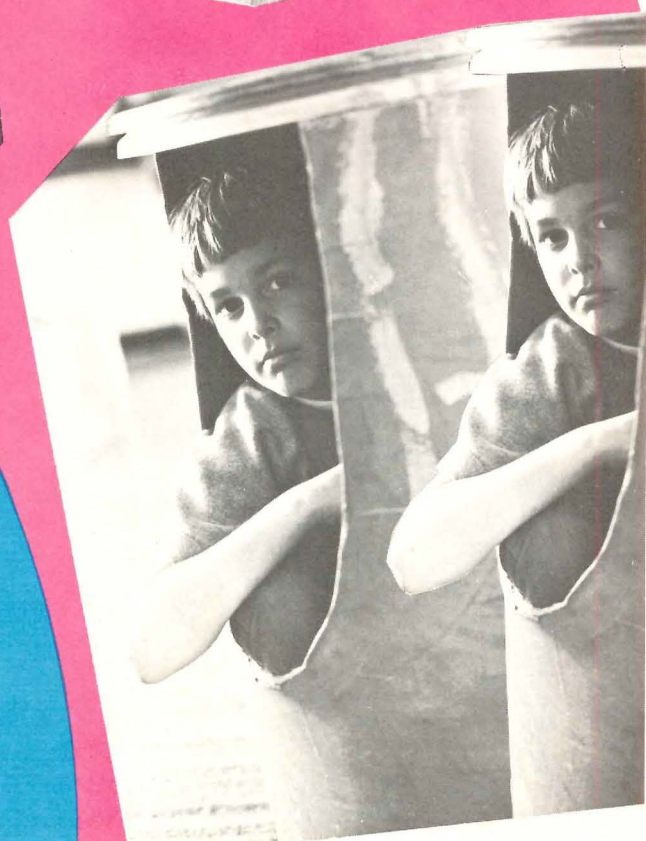
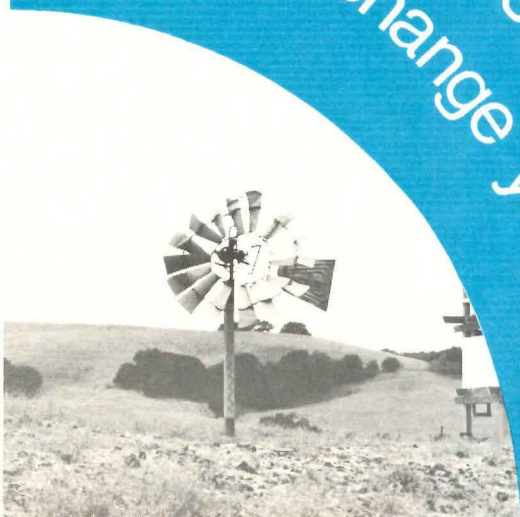
Things are looking real good from here and now. A lot of energy is coming from everywhere. The first Almanac will hopefully be out in latter July 1970.

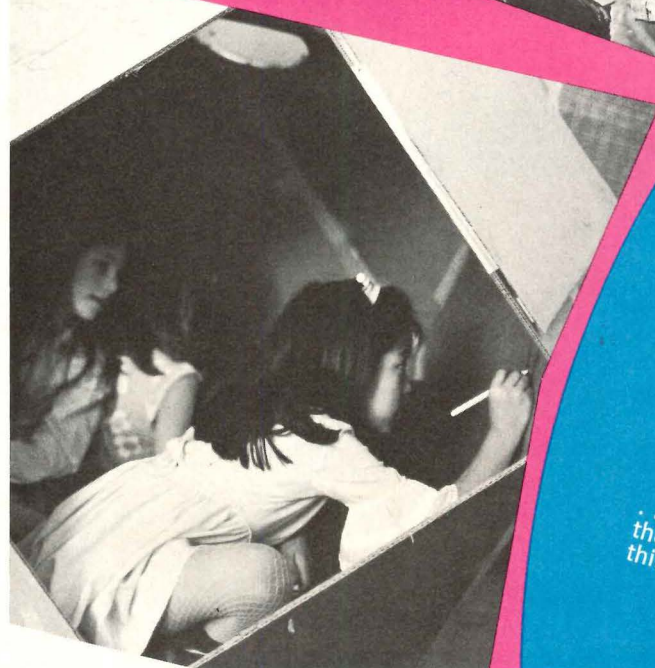
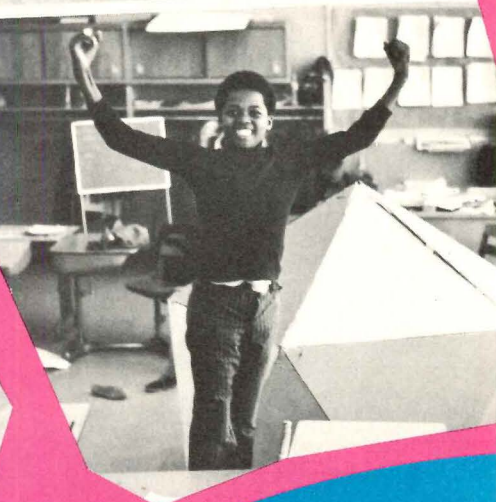
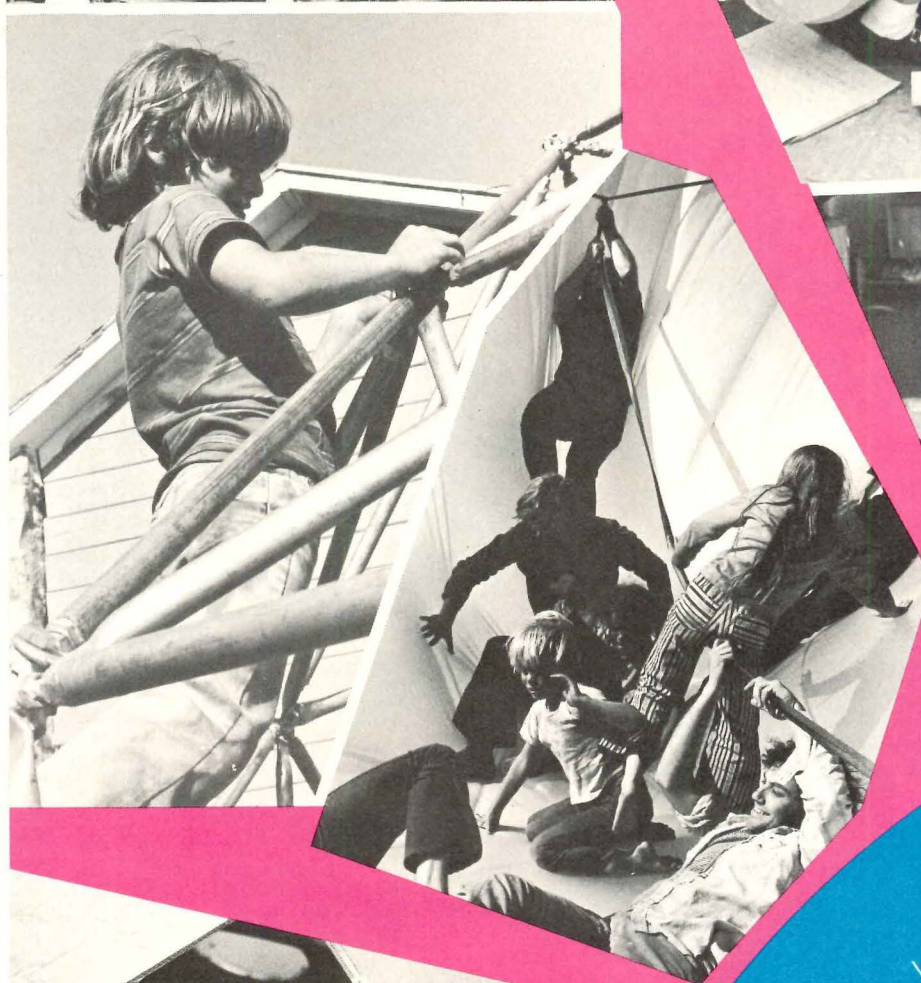
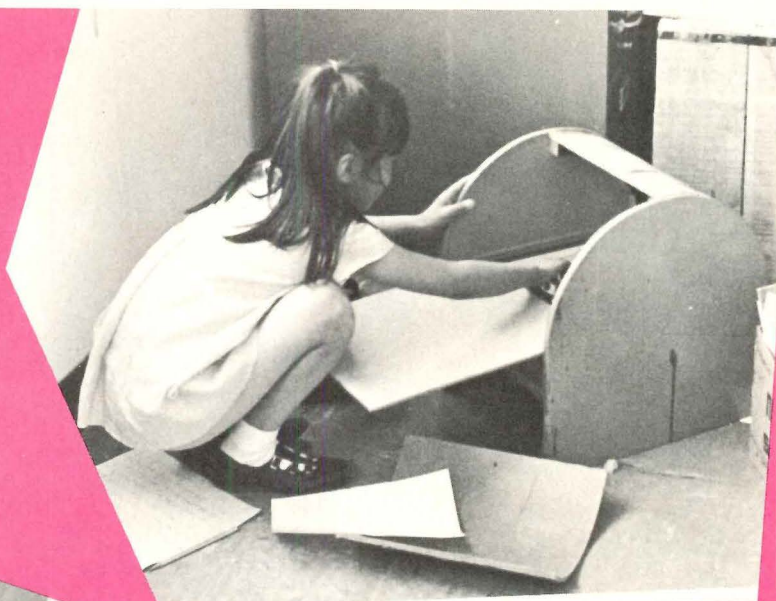
Anyone or everyone with known availability to tools, books, information to further self-education, environment, growth, unity, ideals, suggestions, info from us, subscriptions, or whatever, contact us at:

Canadian Whole Earth Almanac
Whole Earth Truck Store and Catalog
558 Santa Cruz Avenue
Menlo Park, California 94025



our theory is pretty simple
change your surroundings
and you change yourself





... break through the walls
we can build a tree-house when
third grade boy

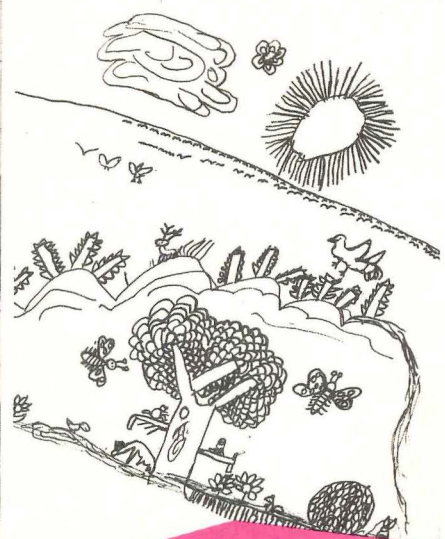
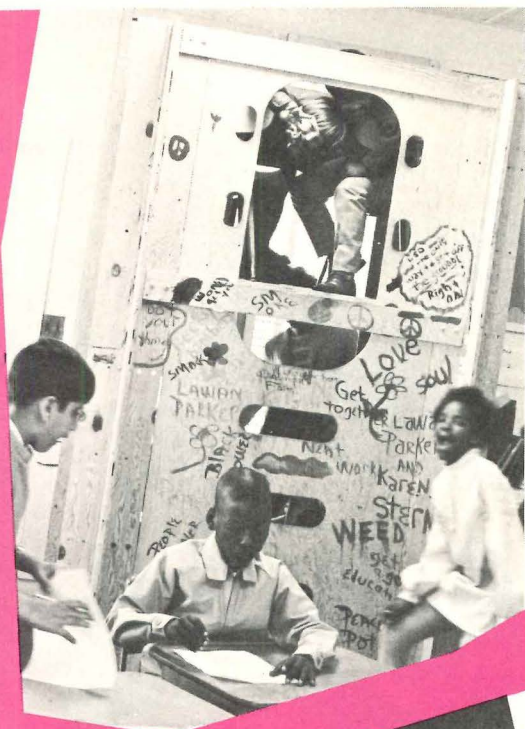
... if only I had a soft
quiet carpeted place in
the room for a small group
to work on reading ... it's
hard for a child to read
next to him is doing
something else.
—first grade teacher

everything is hard.
—First grader

... desks serve to isolate
children, they hide behind
them, the writing tablet
constrains body movement
—second grade teacher

... let's paint a jungle on
the walls
third grade boy

have been to a public school all my life except this year I want to a free school It was nice you can do anything you want.
I am 8 years old my name is Erik



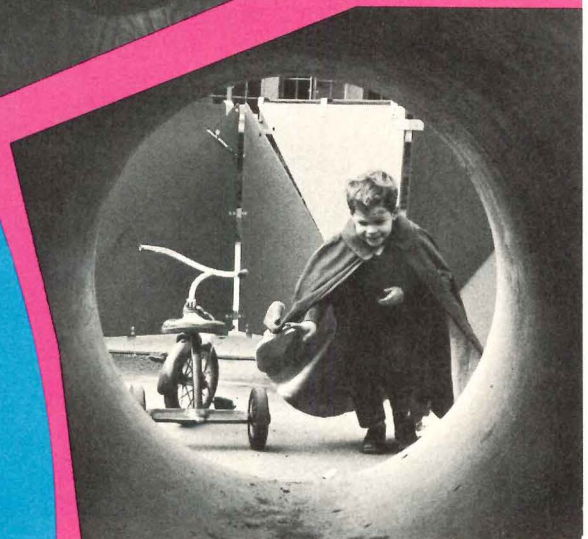
The only reason you never did it before is because you never did it before
—Sixth Grader

learning the skills of change changes the learner.

... kids need a malleable environment, they want to be able to push on the room as well as have it push on them.
—Second Grade teacher

in the school we come from, everything is the same. . . . it's boring

we want a place to scream and yell without disturbing others
—fourth graders



A black and white photograph showing a large crowd of people gathered on a wide street. The crowd is dense, and many individuals are holding up signs or banners, suggesting a protest or demonstration. The scene is viewed from an elevated position, looking down the length of the street. The crowd appears to be moving or gathered for a specific purpose. The background shows some buildings and trees, indicating an urban setting.

about
ing materials,
events and
training so
you learn to
change your
environment
where we live,
learn & work
we are starting
our own design
and learning
community
write or phone us
if you want more information, have thoughts
to share, can help us or use our help

**Farallones
Institute**

731 Virginia Street
Berkeley, California
(415) 525-5425

731 Virginia Street
Berkeley, California
(415) 525-5425



© 1971 THE TRANSFORMER, 84 VANDERWATER ST. SAN FRANCISCO, CALIF. 94133

A COMPLETE PICTURE OF THE EARTH FOR YOU TO PUT TOGETHER

POSTER!

ONLY

THIS BEAUTIFUL, EARTH GREEN, 23" X 23", OATMEAL PAPER, SUITABLE FOR FRAMING, POSTER CAN BE YOURS - BY SENDING THIS COUPON AND YOUR 50 CENTS TO:

the transformer
84 vandewater street, san francisco

BE THE FIRST ON YOUR BLOCK

INCLUDES POSTAGE

50

CENTS

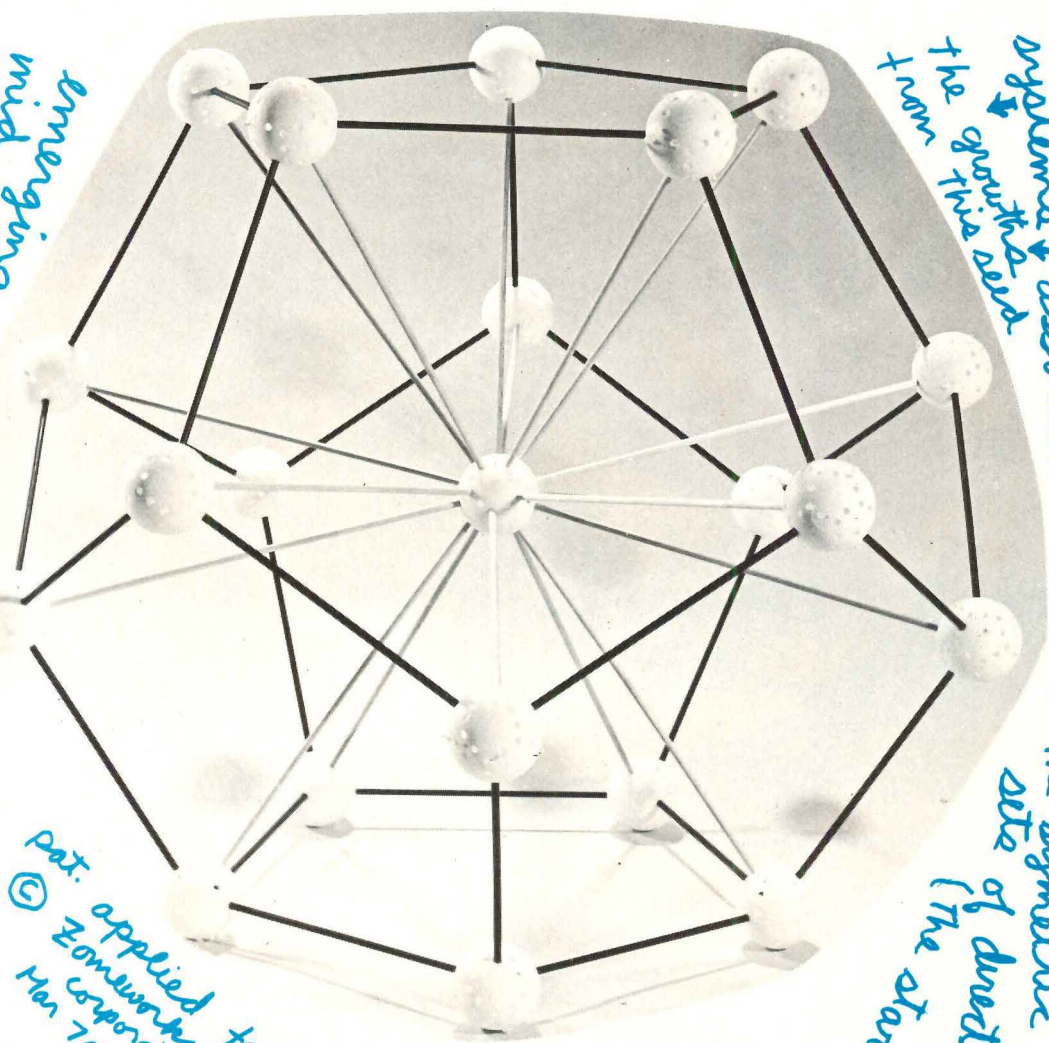
WE ARE WHAT WE EAT AND THINK

CLEAN DREAMS MAKE CLEAN STREAMS

PAT. PENDING. REGISTERED © BY ALL

THIS SEED WAITED THOUSANDS OF YEARS TO SPROUT

In the picture known since the black stroke outline the regular dodecahedron long before Euclid. The dodecahedron is useless as a building block. BUT The gonahedron systems + associated with the asymmetric sets of directions (The stars) the grow the seed from



pat. applied for
© Zomeworks
Mar 70

emerging mid points from the vertices, the face that most flexible and the edge mid points are that exist in our 3D space... occurs again and again throughout the golden section 1:1.6180339... as a structural fact.

6, 10, & 15 ZONE STRUCTURES.
ZOMEWORKS P.O. BOX 712
ALBUQUERQUE, NEW MEXICO
87103 505-345-3696

GROWHOLE BASICS



UNDER CONSTRUCTION

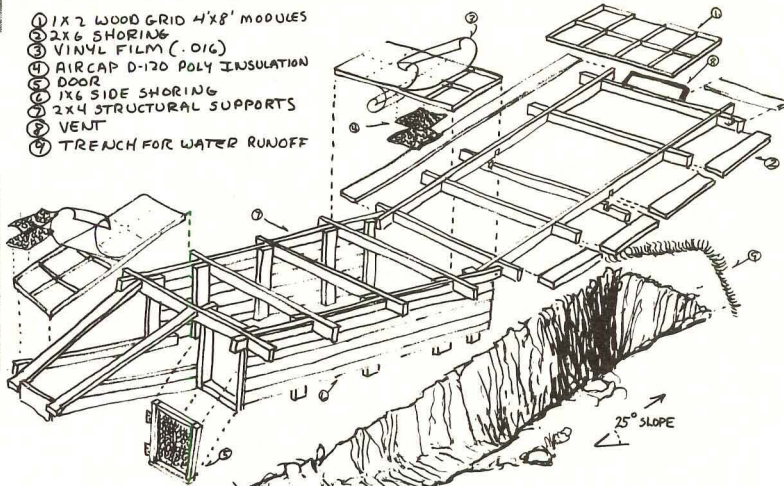


PLANTING

1 THE SUN IS A SOURCE OF FREE ENERGY 2 THE EARTH STORES HEAT
THESE TWO FACTS MAKE IT POSSIBLE TO GROW VEGETABLES/FRUIT IN WINTER

DIG A HOLE THAT FACES SOUTH TO CATCH AS MUCH SUNLIGHT AS POSSIBLE. COVER IT W/ MEMBRANE THAT LETS LIGHT IN AND WON'T LET HEAT OUT. WET DIRT WALLS/FLOOR OF HOLE STORE ENOUGH HEAT TO KEEP WARM THROUGH THE HRS. OF DAYLIGHT. TEMP. INSIDE GROWHOLE MIMIC SO. CAL. VALLEY. PLANTS THAT GROW WELL IN GROWHOLE ARE SO. CAL. VALLEY WINTER CROPS.

- ① 1X2 WOOD GRID 4'X8' MODULES
- ② 2X6 SHORING
- ③ VINYL FILM (.016)
- ④ AIRCAP D-120 POLY INSULATION
- ⑤ DOOR
- ⑥ 1X6 SIDE SHORING
- ⑦ 2X4 STRUCTURAL SUPPORTS
- ⑧ VENT
- ⑨ TRENCH FOR WATER RUNOFF



COMPLETED

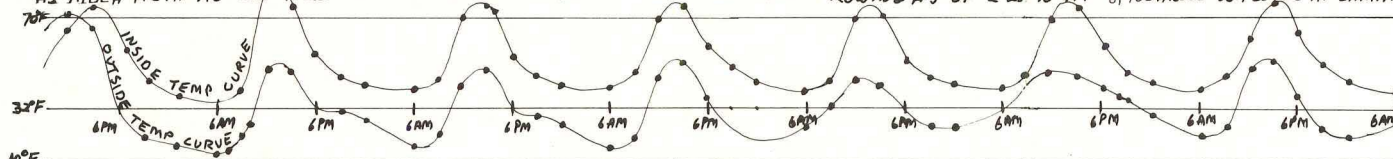


PLANTING



HEAT ECONOMY

THE SUN RADIATES ABOUT 200 B.T.U. PER SQ. FT. OF EARTH'S SURFACE PER HR. ON A CLEAR DAY. ABOUT HALF OF THIS HEAT IS ACTUALLY COLLECTED BY THE GROWHOLE. A WINTER'S DAY IS ABOUT 8 HRS. LONG & THE AREA OF THE MEMBRANE IS ABOUT 300 SQ. FT. WHEN ALL OF THESE NUMBERS ARE COMBINED WE FIND THAT 250,000 B.T.U. ARE COLLECTED ON A CLEAR WINTER'S DAY. THE MEMBRANE IS 2 LAYERS OF VINYL (.016) & 2 LAYERS AIRCAP D-120. EACH LAYER OF AIRCAP IS TWO FILMS, SO WE HAVE A TOTAL OF 6 FILMS. ONE FILM TRANSMITS 3 B.T.U. PER SQ. FT. PER HR. PER DEGREE FAHRENHEIT TEMP. DIFFERENCE BETW. IN-SIDE & OUTSIDE. 6 FILMS WILL CONDUCT 1/2 AS MUCH HEAT AS ONE FILM. THE INSIDE TEMP. IS 50° F. & THE OUTSIDE TEMP. IS 20° F. & THE NITE IS 16 HRS. LONG; THUS 20,000 B.T.U. ARE LOST THRU THE MEMBRANE DURING THE NITE. THUS WE COLLECT 3X AS MUCH HEAT AS WE ARE USING. EVERYTHING IS OK. PLANTS ARE GROWING AS OF 2-28-70 AT 8,400' ABOVE SEA LEVEL AT LAMA.



GRAPH OF TEMP. DIFFERENTIAL - INSIDE & OUTSIDE FEB.

\$ ECONOMY

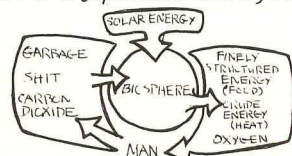
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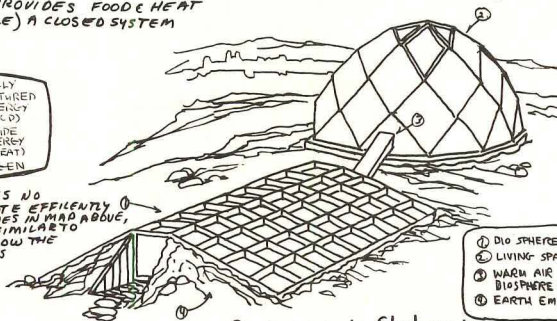
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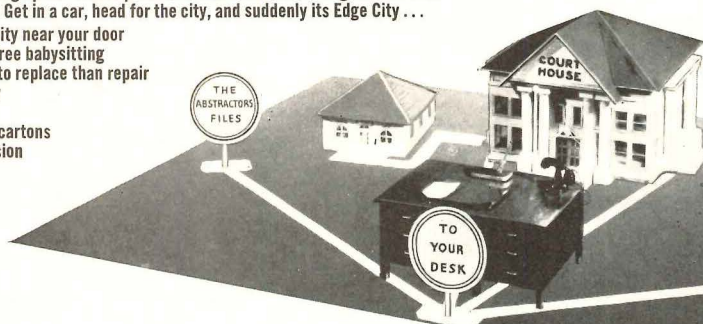
The fat of the land, subdivision, and exploitation techniques from the nineteenth century, guided by legal procedures from the seventeenth century have enabled a large number of landholders (land LORDS) to gain temporary richness – FAT CITY – a “standard of living”. Amassing large amounts of material, they maximise the difference between richest and poorest, it is considered cultural imperative to do this. Laws are benevolently enacted “in the public interest” mainly to protect these large storehouses of fat, whether they be land, capital, or status. Natural resources are limitless crude access to air, water, soil, open space, and youthful energy. In fat City there is one sided consumption of stuff, and single-minded (lineal) categories for everything: there is a place for everything, and everything in its place, whether it be front yards, civic plazas, or reserved seat Super Bowls. A work equals money equals success ethic predominates, measuring people on a financial ruler (a million dollars long) in a land of plenty (home of the brave) all crimes are political (rock festivals).

Examples **** Fat City near your door:

New 1970½ Camaro/Firebird
Large parking structure
Large parking structure empty at night
Happy Hour – 45¢ Martinis
Homesteading and pioneer day
possession is 9/10 of the law
Elbow grease, grey hair, and beer bellies
Ecology on TV and in the newspaper
Sunday

Technoprogess developed within the work ethic provides a storehouse of tools and toys, the acquisition of which becomes more important than the use. See Rock City, overconsume and save. Proliferation encourages irresponsible access. Ads say “get yours here” but theft, even of intangibles, is “punishable by law”. Yet time delay between instant and real make it possible to live one jump ahead of ones credit, gas up on soul acid and cruise (charge it). Minimum needs are provided by the waste products of Fat City – food stamps, found credit cars, supermarket backdoor bins, trash collecting, and rent striling. There exists a split between those who had to work hard to enjoy their energy and those who can get it free. Supercon:umption urges some to take, some to make do, and some to hold on harder. There is speculation on what is a common ideal – while some “revolutionaries” throw rocks thru bank windows, others dig up streets for parks and tear down fences to grow real food behind shared houses. Get in a car, head for the city, and suddenly its Edge City . . .

Examples **** Rock City near your door
Drive in movies offer free babysitting
Finding a car cheaper to replace than repair
Living under a freeway
Polaroid film
Free empty ice cream cartons
Poor folks with Television
Dial a prayer
Food conspiracies



ALIGN EDGE
WITH HORIZON

GAP
W
F

Following a general alert and media warnings, groups that fear for their survival either actively patch up their environment, or escape into less troubled lands and less used ideologies. Those that leave take as little of the technological past as they can get away with (as if the Roman Empire died of willful neglect) basic needs only – the ability to get food, care for children, breathe clean air, and enjoy one another. Life in teepees, earth houses, domes (the obvious technology) or the salvaged plastic of other eras. Those who stay, and yet maintain an earth awareness are in for an entirely different life style. Some deal in immense quantities of weightless information, some deal to eat, most must stay mobile and this uses vast amounts of energy. These media nomads must live many roles – actors, cowboys, clowns, pirates – in order to gain access to Fat City technology. They rely on part time collaboration with the old order powers (risking “borderline radical” labeling). Edge City is a life of tenuously making do without sacrificing the ideals of the new vision. (You’ve gotta keep the fantasy – Real(C)ity is just around the corner)

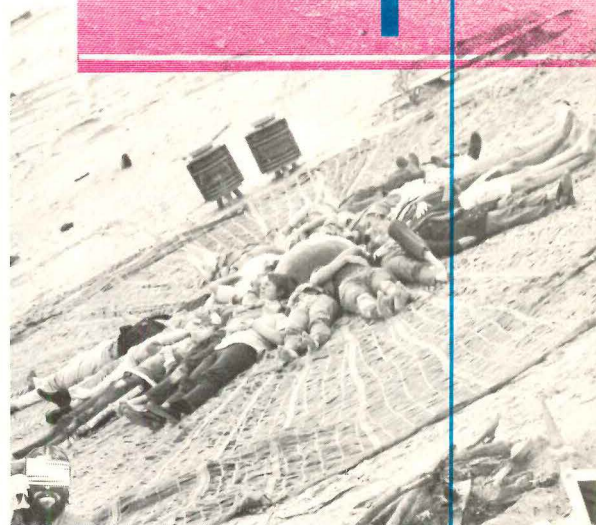
Examples **** Edge City near your door

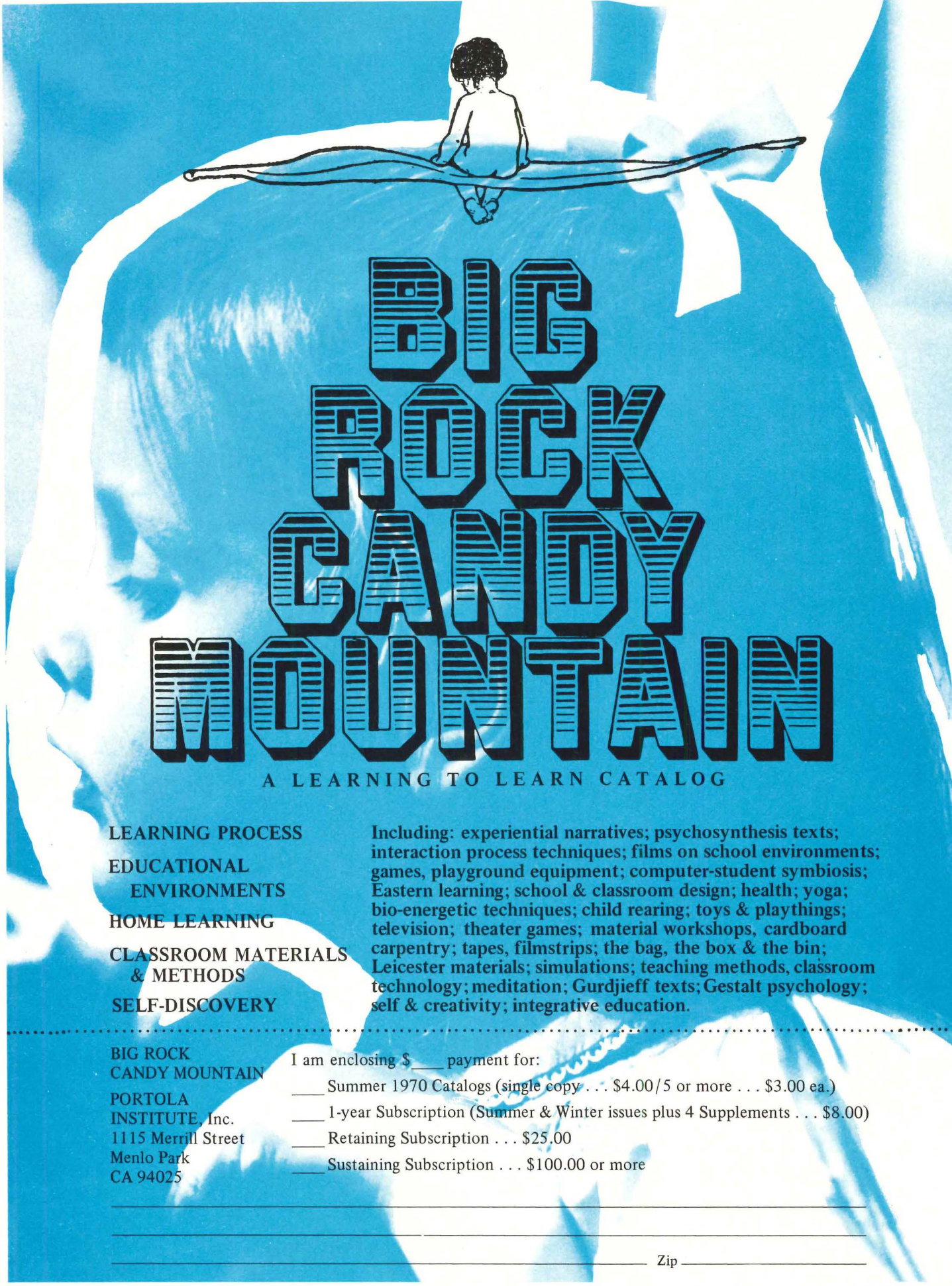
Whole Earth Catalog
Video Freaks
Hippie bus with solar energy
Cultural shock absorbers
Searching old maps for hot springs
Collecting TV commercials as historical documents
Garbage bins divided into:
Plant/animal organics * Plastic/oils * minerals/metals

The boundaries and limitations of group consensus/individual initiative have been breached. The difference between man building (the process) and natural growth is not immediately apparent. Time can be shaped at will – design as looking ahead in times of scarcity will not exist. Real(C)ity – people relating to events in their own mind and events in the real world will do so only at different speeds, (it appears equivalent). A multilevel projection in two seconds as intense as a million years living it. Although one may have an energy budget higher than ever, he will appear to sip it delicately, wasting far less than in Fat City. Living invisible forms – riding inside animals, drinking the sap of trees, for intangible transformations, the outward manifestations take on many forms. Sun focus, moon trips, the fossil fuel legacy and the genetic code a language. Now Rock City plastics look crude, compared to the structure of DNA.

Examples **** Real(C)ity near your door

Talking to porpoises
Wild mushroom hunter with microfilm field guide
1950’s lifeart
Inflatable mist hurricane guard environment
Suana dome every two hours, need no clothes
Sun dance in mylar microwave suit
Walking catfish that kill dogs





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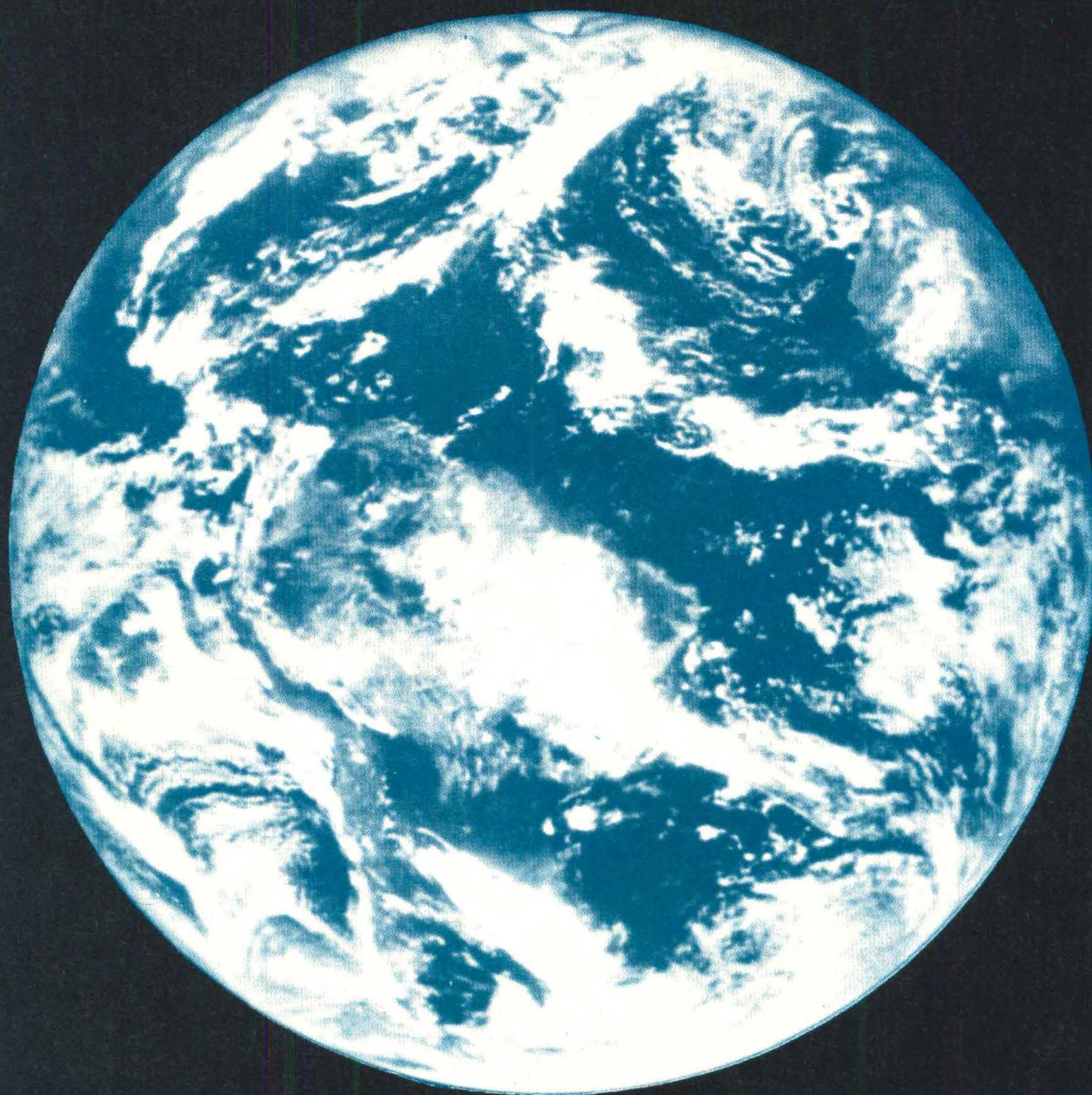
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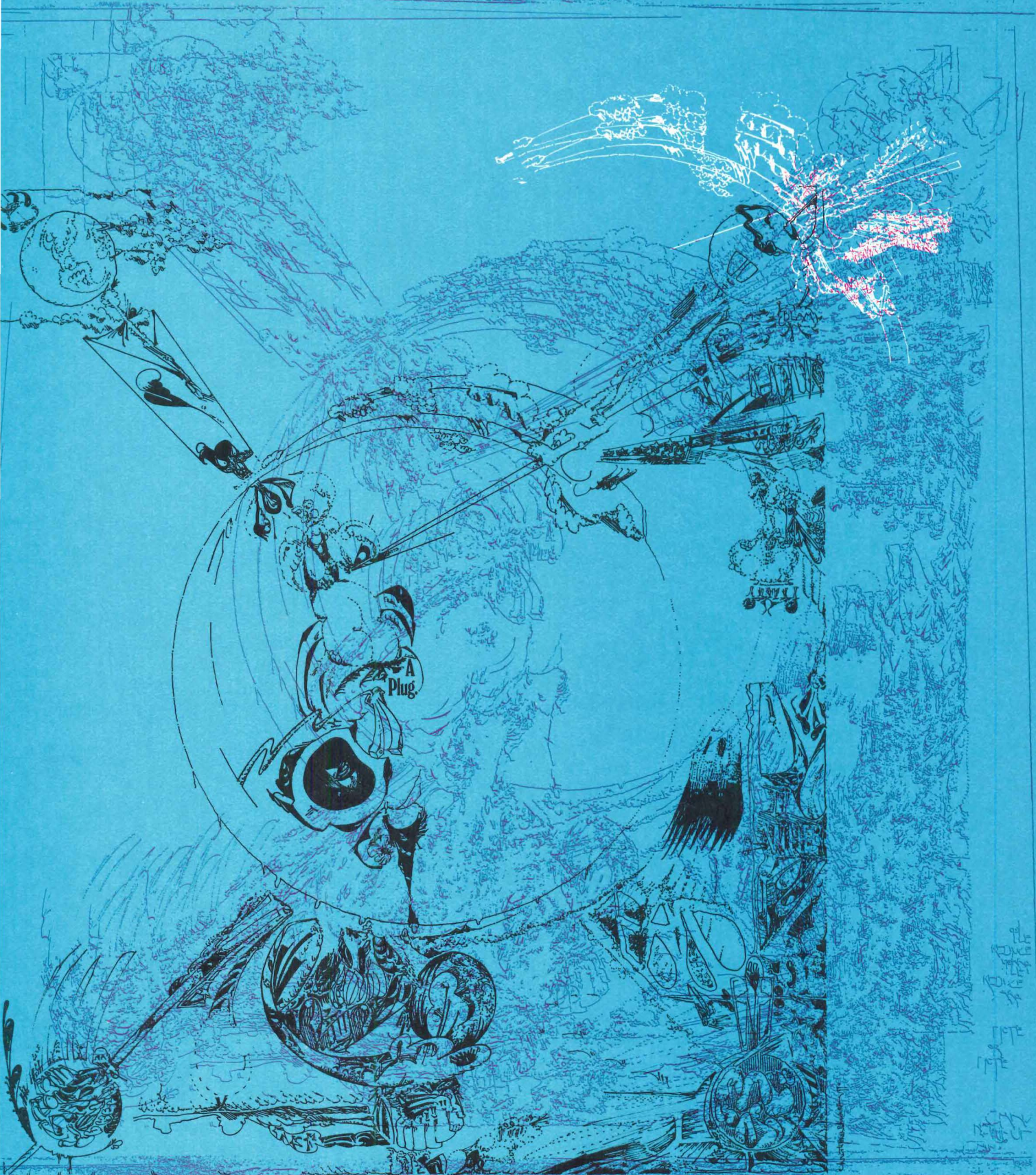
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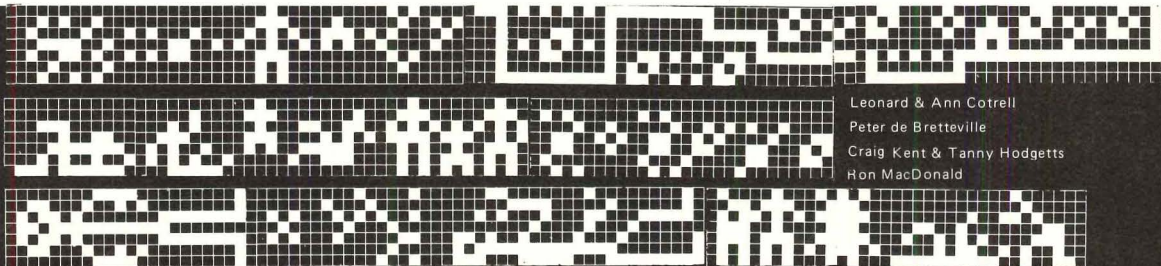
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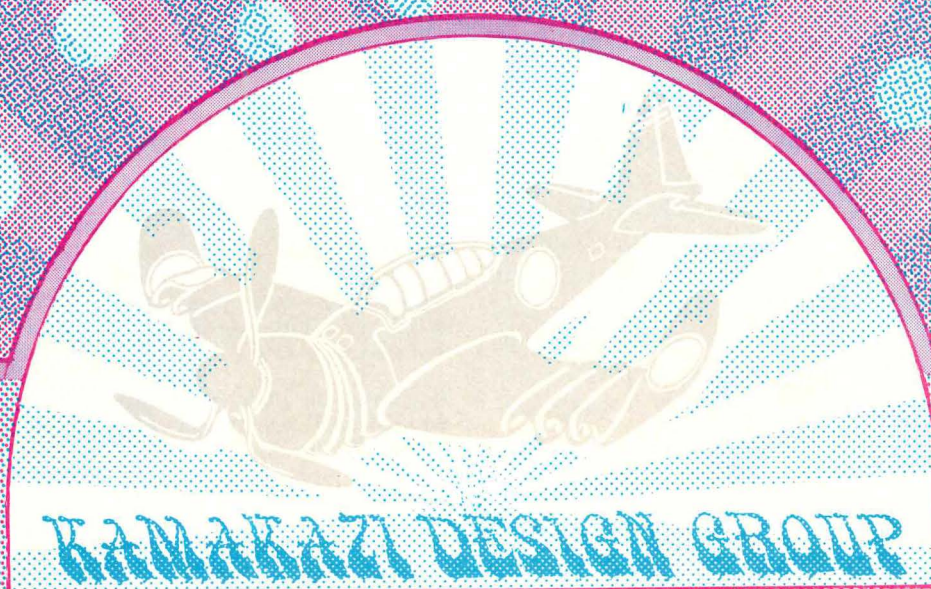
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design: Sheila de Bretteville



ECLECTIC CLASSICISM

Last Lingua Franca

It is possible to view the history of American building as the search for a national vernacular — a discrete urban *architecture de rapport* whose language could be enjoyed as common property. In eastern row houses of the 18th and 19th Centuries, such a vernacular existed, despite the shifting parade of “styles” that masked their façades as the latter century wore on. But row houses, by their very nature, are a conservative lot, and the stylistic chaos that later developed in mid-Victorian America was more evident in new and nondomestic building types.

The proliferation of historical styles, inseparable from the notion of the picturesque, was also fundamentally anti-urban. The polite conversations between Georgian and Greek Revival terraces became a marketplace squabble between the Romanesque breweries, Renaissance banks, and Egyptian warehouses of new commercial centers. Indeed, the ruthless individuality with which our ancestors built their fortunes and their lives is evident with belligerent clarity in the architecture of their cities.

In creating the picturesque pile and the unique silhouette, economy of plan was often sacrificed to eccentricity of design, with attendant costs and inefficiencies. By 1860, Americans were able to see that they had built of their cities a Tower of Babel—a polyglot collection of buildings lacking both internal coherence and communal integration. A new order was needed and a new Rule of Taste that would yet satisfy the period’s delight in expressive surfaces and massing. Both were met in the architecture of Second Empire Paris.

The enormous influence of Paris, first through the Second Empire style and then through the Ecole des Beaux-Arts, persisted in this country through the 1930s. The intrinsic merits of the period as well as its formative influence on 20th-Century architecture have been largely ignored by historians of the modern movement, partly because the initial acceptance of the new approach could only be achieved through the deposition of the earlier, academic mode. But Eclectic Classicism was one answer to a recurring problem that has again become contemporary — the need for an urban vernacular; as such it bears renewed examination.

Red brick with white stone trim in classical styles ranging from French Renaissance to Colonial Georgian, were used to form the city's domestic backbone.

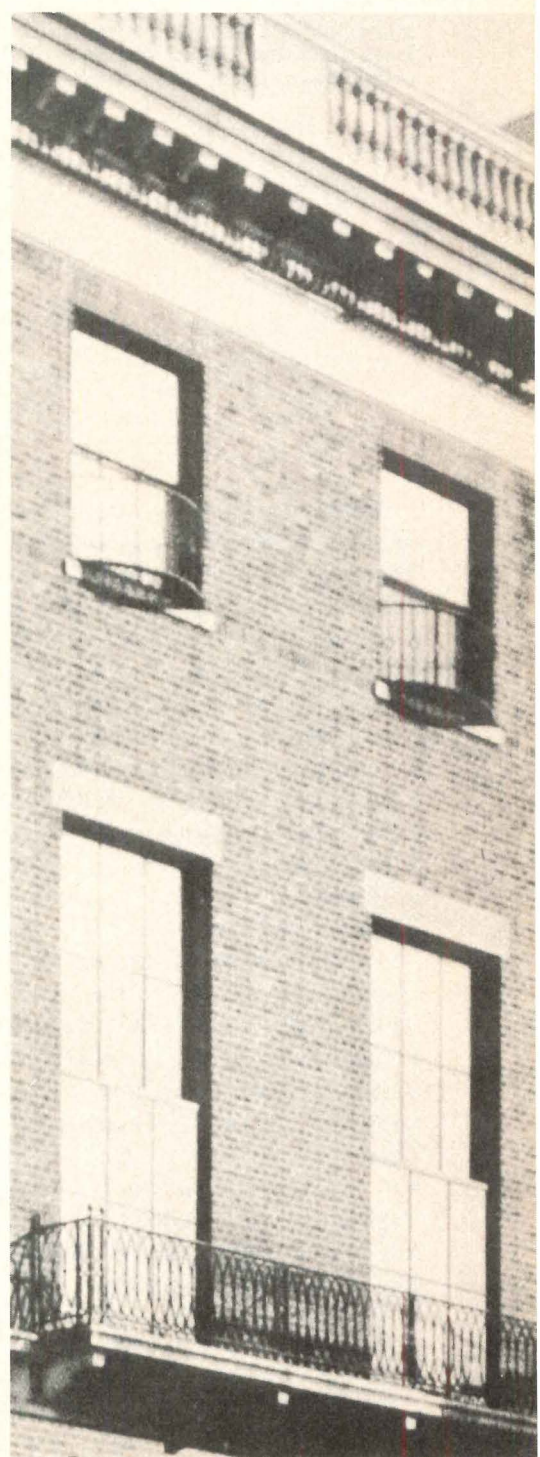
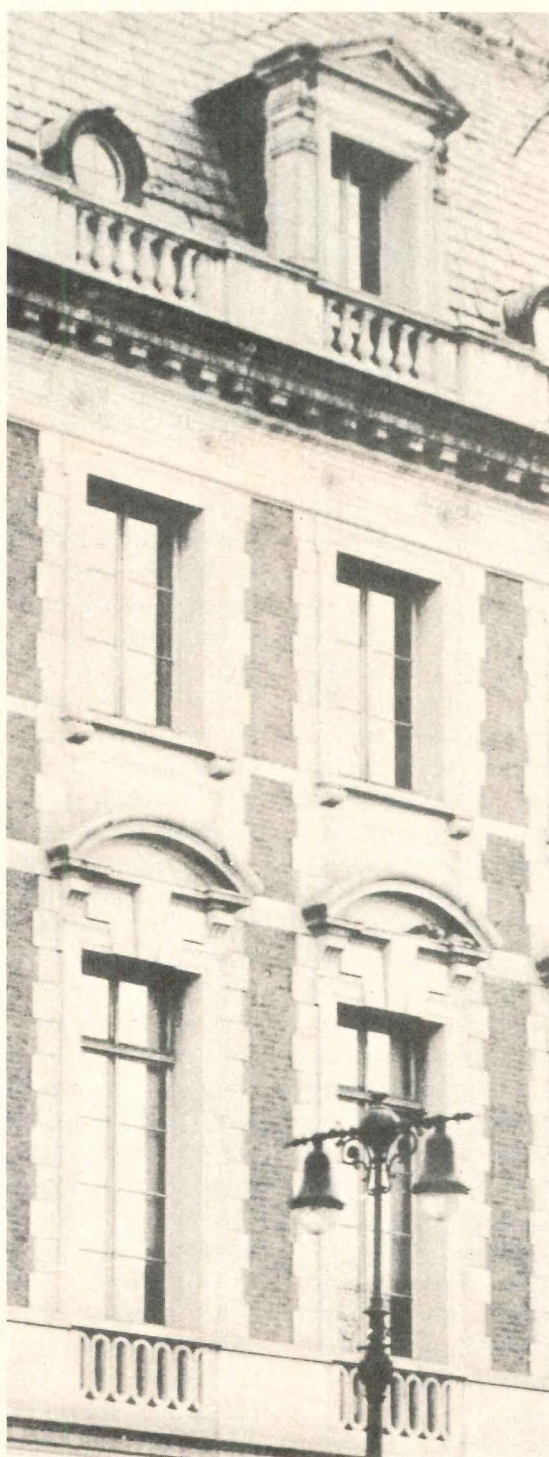
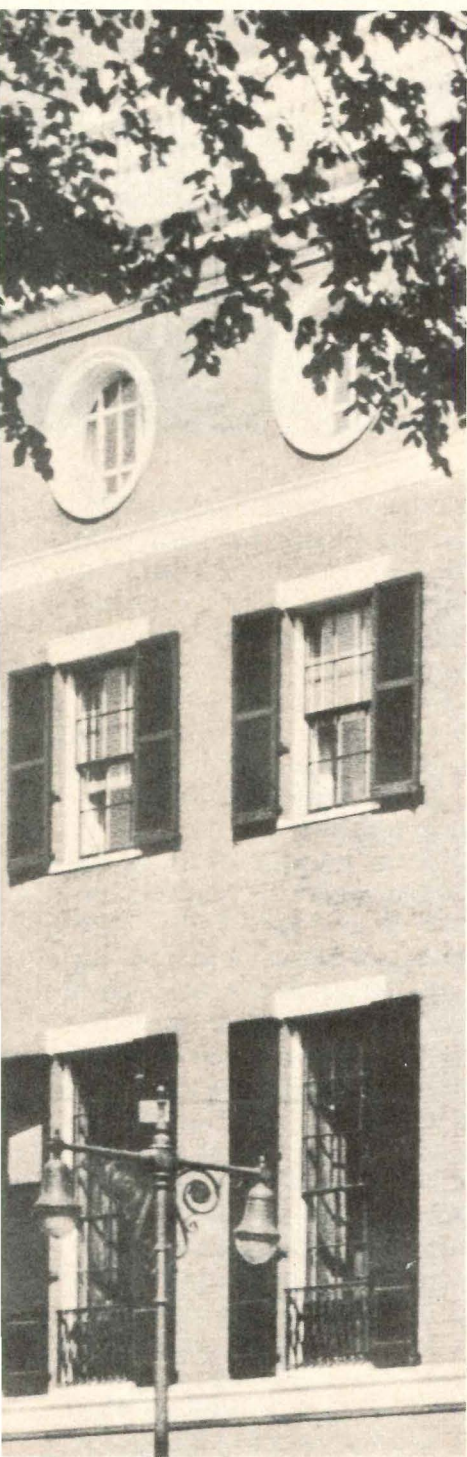
Lotos Club (formerly Schieffelin Residence), New York. Richard H. Hunt (1898–1900).

Willard Straight Residence, New York. Delano and Aldrich (1913–15).

William Starr Miller residence, New York. Carrère and Hastings (1912–14).

Knickerbocker Club, New York. Delano and Aldrich (1914–15).



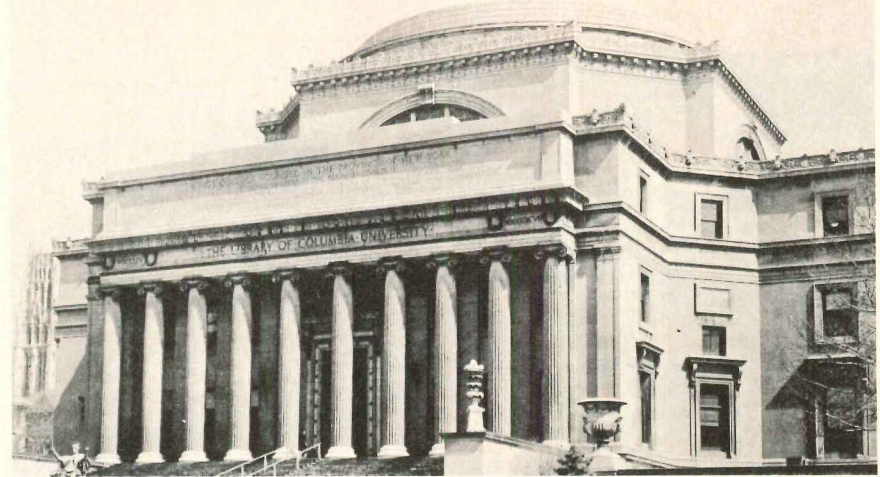


Well-dressed limestone, in the more emphatic Roman and Renaissance manners, were used largely for monumental public buildings.

Metropolitan Museum of Art, of New York; central portion. Richard Morris Hunt (1894–95). Begun shortly after the Columbian Exposition in Chicago, where Hunt retained design control for the entire vast project, it was conceived on the scale of a Roman bath with an Imperial Parisian plasticity.

Low Library, Columbia University, New York. McKim, Mead & White (1893–97). One of MMW's most perfect monuments is the focus of a complex formal plan.

Grand Central Terminal, New York. Warren and Wetmore (1903–13). Splendid monumentality and an extensive use of glass make this one of America's finest embodiments of the Beaux-Arts ideal.



There is no doubt that Paris, the heiress to an earlier classical tradition, produced the most civilized urban architecture of the mid-19th Century. Although the cubic austerities of the Classic Revival were no longer acceptable in the reign of Napoleon III, a classical idiom was still preferred. It was the genius of Lefuel, successor to Louis Visconti in the grand project to unite the Tuileries with the Louvre, to employ a classical vocabulary in the highly three-dimensional manner demanded by contemporary taste. But it was not the Louvre project, nor the Opéra, nor any single monument that made the Paris of these Imperial years a center of architectural civilization. Rather it was the high standard of taste and competence in the design of blocks of flats and commercial buildings that lined the new avenues and boulevards — united by common materials, proportions, vocabulary, and quality of execution. It seems unlikely that a similar standard could have been achieved in, say, the Gothic mode, which seemed, as Henry Russell Hitchcock said, “excessively dependent on the individual capacities — not to say the caprices — of its leading practitioners.” In fact, none of the more exotic Romantic styles seemed capable of yielding an urban vernacular. Nevertheless, these Parisian modes bore one important resemblance to the High Victorian Gothic — both were pure 19th-Century creations, instantly recognizable as such — and not archaeological reconstructions.

The first recorded use of a mansard roof in Ameri-

ca (the most obvious element of the French style) was in the Schiff House (New York, 1848–50), built by Detlef Lienau, a Danish student of Henri Labrousse whose later Schermerhorn houses were considered “superb examples of French design.” Richardson, a student of Henri’s brother Théodore, also worked in the Second Empire mode immediately after his return from France in 1865. Although he soon abandoned it for Gothic and Romanesque inventions, the splendid rationality of French planning remained evident in much of his work.

But the true beginning and greatest credit for the American practice of architecture *à la française* belongs to Richard Morris Hunt (1827–1895). Hunt was sent to Paris at the age of fifteen to prepare for entrance in the Ecole des Beaux-Arts under Lefuel himself. The master, who had already replaced Visconti on the Louvre project, further advanced to become Architect to the Emperor, and had his brilliant pupil appointed Inspecteur de Travaux. In this capacity, Hunt was responsible for the design and plans of the vigorous Pavilion de la Bibliotheque (completed 1855). Although he enjoyed the best connections in Paris and was offered attractive government positions, Hunt chose to return to America in 1856. There, in a series of important public and private commissions, as well as through the students he trained in his own New York atelier, Hunt spread the new French manner. The studio he built on West 10th Street, where his apprentices included George



Post and Henry van Brunt (both of whom later worked with him on the Columbian Exposition), as well as William R. Ware, and Frank Furness, was designed in a contemporary French vernacular. It was followed in 1868 by the first New York apartment house, built on east 18th Street for Rutherford Stuyvesant (destroyed 1956). This house, influenced somewhat by Viollet-le-Duc, was a startling innovation for New Yorkers who considered it rather scandalous to be living all on one level with strangers above and below. With scandal allayed, it became, after the office building, the century's most important building type.

Hunt's chateaulike Vanderbilt House (New York, 1879) was another departure for, until that date, the American aristocracy were content to live in modest, if tasteful, terrace-houses whose façades belied the real wealth of their occupants. This opulent *hôtel* was a favorite of Charles F. McKim. The monumental central portion of the Metropolitan Museum façade was conceived on the scale of a Roman bath with an Imperial Parisian plasticity. It dates from 1895, two years after the Columbian Exposition in Chicago where Hunt retained design control for the entire vast project. Through his role in this exposition, which established Eclectic Classicism based on French planning as a national style, Hunt exerted a great measure of his influence. But at least as important a part was exerted through his student William Ware who, in founding the schools of archi-

tecture at MIT (1866) and Columbia (1881) on the Beaux-Arts model, formed the tastes and habits of generations of architects well into this century.

If Hunt was chiefly responsible for the introduction of French-based classicism in America and its acceptance by leading patrons, the firm of McKim, Mead and White (henceforth MMW) nationalized the style and brought it to fruition. McKim's studies in Paris and travels in Italy, as well as his experience (together with Stanford White) in Richardson's office, yielded a firm grounding in French planning and classical design. Nevertheless, his early work in the Shingle Style revealed a taste for the picturesque that, to some degree, always informed his work. MMW's move from decidedly picturesque to more formal styles seems to have been effected through the influence of Joseph Wells, a European-trained designer employed by the firm who had himself worked with Hunt. The turning point came with the Villard Houses (1885) and the Century Club (1891) both in the 16th-Century Italian style, for whose design Wells was chiefly responsible.

But if MMW showed an early preference for the Italian Renaissance, they were equally competent — often brilliant — in a variety of classical styles including Imperial Roman and Georgian Colonial. Although very consciously and creatively eclectic, there is considerable unity in the firm's production, particularly after the Columbian Exposition where, jointly with Daniel Burnham and under the watchful eye of Hunt, they formulated a new and national standard of taste. Italian Renaissance or Roman designs, executed in well-dressed limestone, were used largely for monumental public buildings, with Roman preferred for a particularly grand effect as, say, the focus of a complex Beaux-Arts plan (Low Library, Columbia, 1898). For domestic and less conspicuous public buildings, they opted for Colonial or Renaissance styles, using a more modest red brick with limestone trim. This disposition of materials, which broke the pattern of the brownstone decades and connected with the earlier Georgian tradition, was perhaps the firm's most valuable contribution. Since the ubiquitous, inexpensive brick was the most suitable material for an urban vernacular — a fact ignored by the taste for relatively costly and poorly weathering brownstone veneers, its reinstatement as an acceptable surface was an important step toward a more realistic, unified city architecture.

These materials continued to be used in a variety of classical idioms by the next generation of architects, of whom many of the most distinguished passed through MMW's offices. These included John Carrère, Thomas Hastings, Edward Palmer York, Philip Sawyer, Cass Gilbert, William Howells, and Harold van Buren Magonigle. In addition to the training they received under the partners, most had studied at the Beaux-Arts-based architecture schools of MIT or Columbia (both of which, from the beginning employed French instructors) and often at the Parisian Ecole itself. Other major architects of the

period who did not work with MMW, including Chester Aldrich, Whitney Warren, and John Russell Pope, nevertheless studied at one or another of these institutions.

The result was that, by the first decade of this century, America boasted a greater number of extremely well-trained architects — all practicing in very closely related styles at an extraordinary level of competence — than ever before. Moreover, they had instituted a new method of working — in large groups with armies of specialized designers and draftsmen — that made them among the most efficient in the world. The complexity and number of projects successfully undertaken during these years by such firms as MMW, Warren & Wetmore, Carrère & Hastings, York & Sawyer, and Delano & Aldrich made them world leaders with as great an influence in Europe, particularly England, as had earlier been exerted upon them. The firms tended to specialize, to some degree, both stylistically and by building type. Warren & Wetmore's hotels and railway stations, for example, were executed in a particularly pure Beaux-Arts style, while York and Sawyer's many banks were often of Italian Renaissance inspiration. Carrère and Hastings, who rivaled MMW in commissions for fashionable townhouses and wealthy institutions, preferred a mid-18th Century French manner, although some of their best buildings are in the earlier Louis XIII style. Delano & Aldrich's townhouses, meanwhile, often displayed a chaste Federal simplicity.

Whatever the stylistic variations (something perceivable then only to the trained eye and thus almost invisible now), the total effect was one of an ambiguous and anonymous classicism, with all the symbolic advantages such images obtain. For an uncertain, if not parvenu, wealthy class, it satisfied the need for a Rule of Taste; a beacon for aesthetic Riding Hoods through the forest of Victorian pluralism. In addition, it provided a high degree of comfort and convenience in housing, as well as thoroughness of detail, through the design of less fanciful and more economic plans. The effect of such plans on the new office buildings likewise reduced costs while providing a respectable commercial image.

The effect on the cityscape was especially profound. The particularity of buildings that fragmented the urban scene at mid-century yielded to

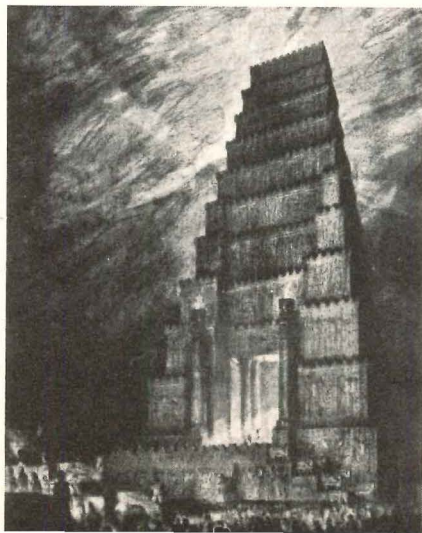
greater social ease and communication, the fruits of a common language and common materials. The fabric of the city began to assume a more uniform texture as the quality of a tapestry replaced that of a patchwork crazy quilt. The ability to conceive the city as woven of whole cloth, combined with the ability to plan and build on a grand, often formal scale, was the chief genius of this Beaux-Arts dominated period. Its effect on modern architecture is witnessed dramatically in Rockefeller Center, one of this century's most successful urban complexes. It is significant both that the Center was team designed, a concept first developed in these eclectic years, and that Raymond Hood, who had studied both at MIT (B.S. 1903) and at the Ecole des Beaux-Arts (Diploma 1911) was a conspicuous member of its board of consulting architects.

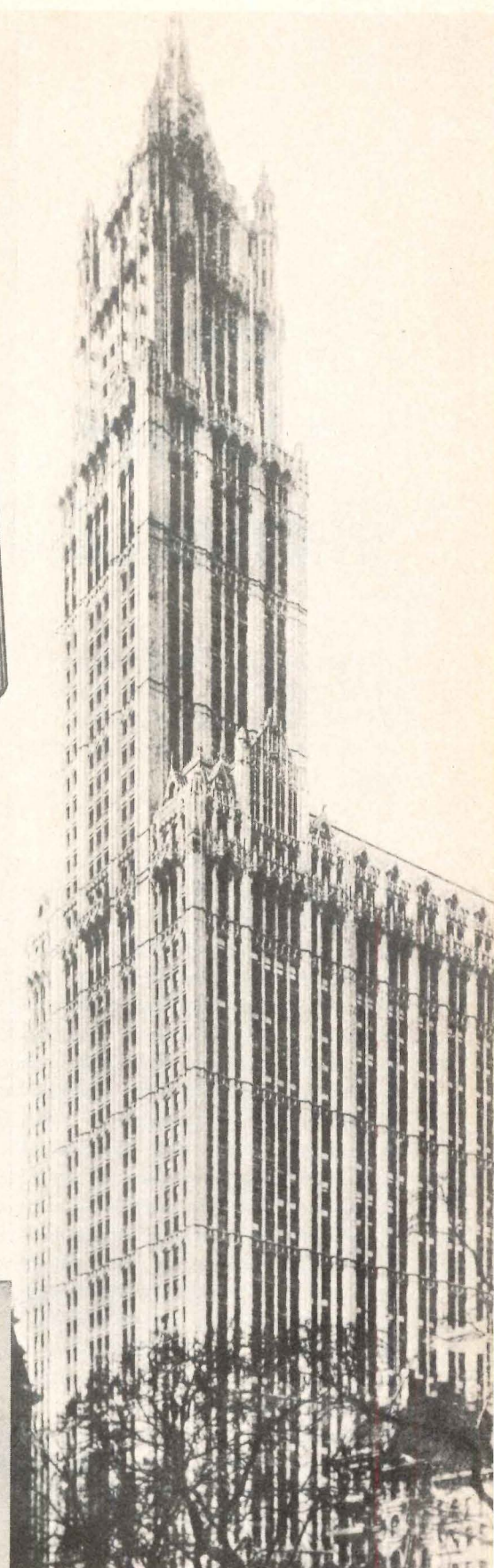
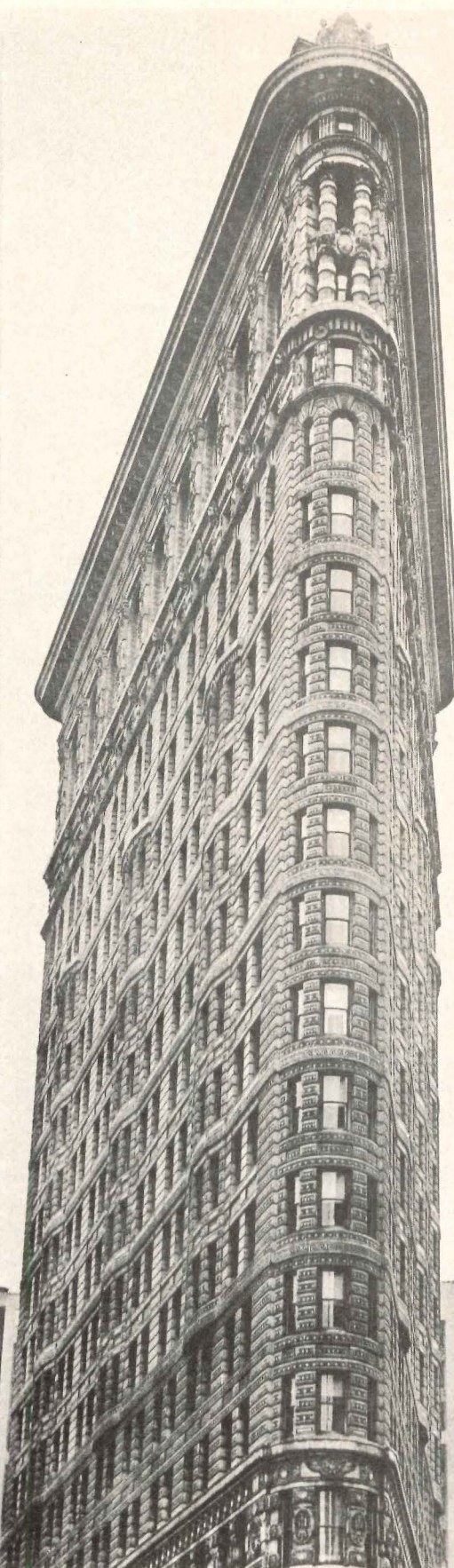
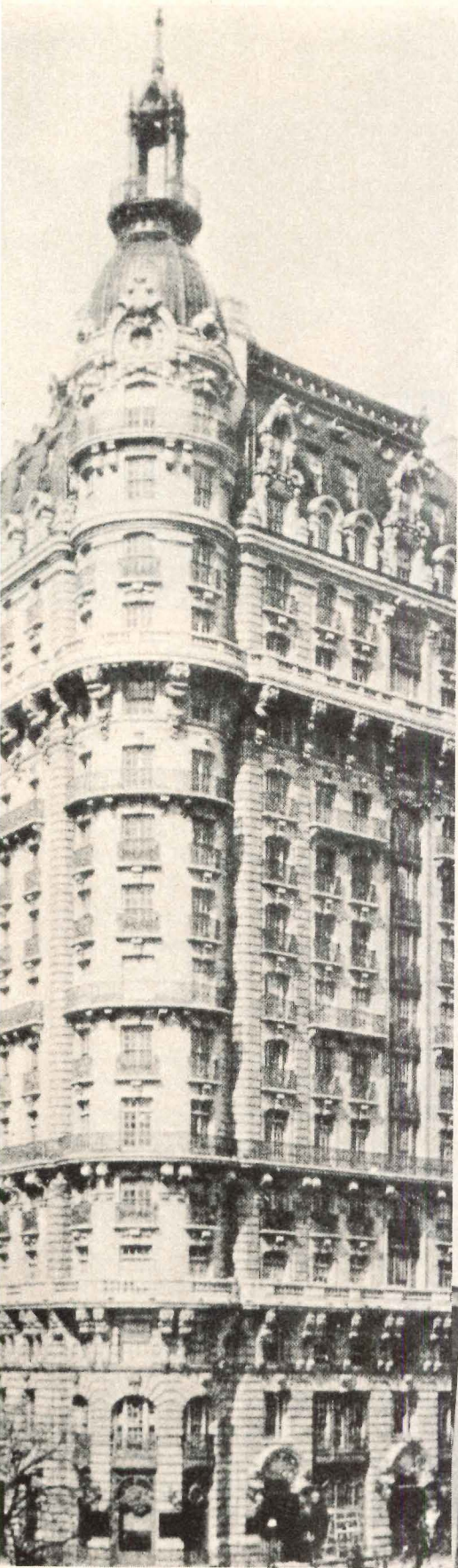
Through its principles of rational planning, taught to countless architectural students at home and abroad, the Beaux-Arts approach remained vital well into this century. The classical idiom in which the theory found expression, however, declined, partially, perhaps, for its apparent incompatibility with the tall office and apartment building. The classical vocabulary, enunciated *fortissimo* in buildings of Wagnerian proportions, easily became absurd (New York Municipal Building, MMW, 1908), particularly when the inspiration was Roman or Renaissance, rather than, say, Baroque. That it was possible to achieve through sensitive handling is evidenced by such masterpieces as Burnham's Flatiron Building (New York, 1901), Cass Gilbert's West Street Building (New York, 1905), and Albert A. Kahn's General Motors Building (Detroit, 1921). Nevertheless, the tall office building remained the subject of Romantic invention, often by those very students of the Beaux-Arts (e.g. Cass Gilbert, and York & Sawyer) whose work was otherwise consistently classical. It became increasingly so in the twenties and thirties when, partly in response to the new zoning laws, the silhouettes of office buildings began to recall medieval hilltowns and Mayan ruins. Since commercial buildings tended to be increasingly of the vertical type, the classical vocabulary began to disappear from the marketplace. In addition, the townhouses that provided a principal expression for the style became increasingly rare as center-city land costs soared in a no longer tax free economy, forcing a change in the lifestyles of the rich.

Ultimately, perhaps, the decline of classicism and concomitant rise of the modern styles (for they were seen then as alternative modes as they are again, in retrospect) simply reflected the renewal of American anti-urbanism and "individuality." These attitudes, which refused to acknowledge the city as a unique entity with each element responsible to both its immediate and far-flung neighbors, revived the chaos of mid-Victorian days. The notion of an urban vernacular disappeared once again in the idolization of genius and the "self-expression" of small minds.

Stephen A. Kurtz

Drawing by Hugh Ferriss of a reconstruction of Solomon's Temple.





The office building remained the subject of romantic invention by students of the Beaux-Arts whose work was otherwise classical.

Ansonia Hotel, New York. Graves and Duboy for W.E.D. Stokes (1899–1904). The classical Beaux-Arts vocabulary, enunciated *fortissimo* in buildings of Wagnerian proportions, easily became absurd.

Flatiron Building, New York. D. H. Burnham & Co. (1901–03). That the classical vocabulary could be successfully applied to the tall building, is evident in a few rare instances of sensitive handling.

Woolworth Building, New York. Cass Gilbert (1911–13). The tall office building remained the subject of romantic invention, often by architects whose work was otherwise consistently classical.

Photos: Courtesy Municipal Arts Society of New York.

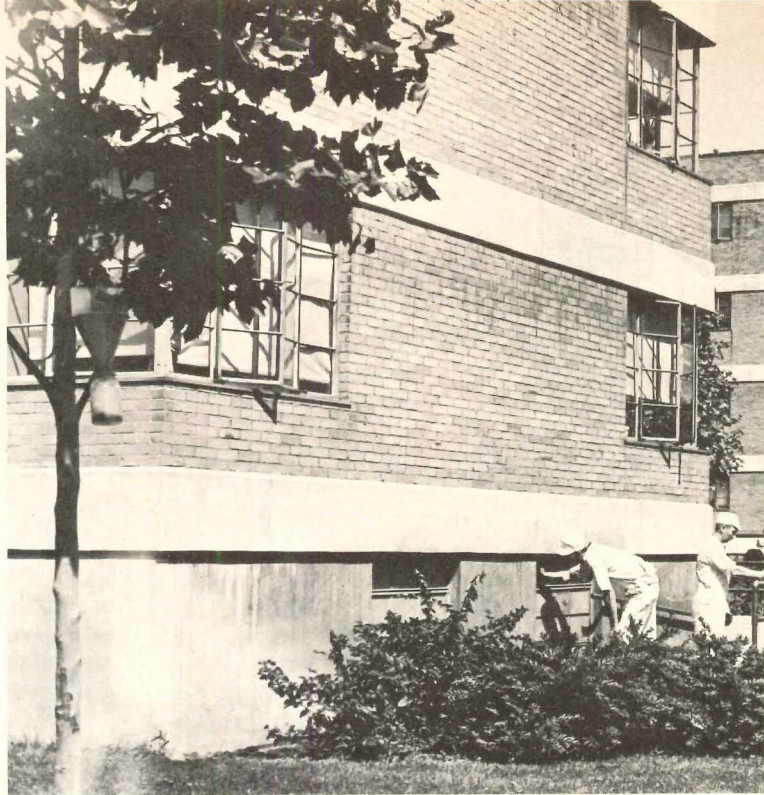
Toward an Urban Vernacular

This is the limit I would today accord to freedom: the small movement which makes of a totally conditioned social being someone who does not render back completely what his conditioning has given him.

Jean-Paul Sartre

An urban vernacular is, almost by definition, grounded in reality — a reality of common problems whose shared solutions are achieved through the economic use of available materials and methods. The latter, in turn, permit a not unlimited range of formal expression that has developed in the past either through unsophisticated tradition (as in the Mediterranean towns of Italy and Greece) or through dictatorial imposition (the Italian tastes of Charles II reflected in the façades of 18th-Century London). Times and places that scorn tradition and authority, valuing the unique for its own sake, are decidedly uncongenial to the notion of a common architecture. Evidence for the ease with which such values, the hallmarks of “democracy,” degenerate into encapsulation and irresponsibility is abundant in the streets of our own cities. Being unique is at least unavoidable, and at most interesting. Being aggressively unique (the will to be *as different as possible*) is antisocial and wasteful.

We have, at various times in our history, achieved a very successful urban vernacular, particularly in the Federal and Greek Revival periods and again after the Columbian Exposition of 1893 when, under the influence of Beaux-Arts design, an Eclectic Classical style prevailed. But the value of the “individual” was soon reasserted to fragment the cityscape into a battleground of competing formal systems. Rarely have we been content to employ a limited range of materials and techniques (the most available and least expensive), exploring them in formal systems whose aesthetic success should be somewhat in-



dependent of the personal talents of their users. What is needed, if we value a coherent urban vista slightly less illustrative of our alienated lifestyles, is a formal vehicle capable of producing a quieter, more communicative environment. In fact, the precedents for such a style are exceedingly rare, rare enough perhaps to be considered themselves the work of genius. They make use, for the most part, of concrete frames with brick infill — those common, “invisible” materials of the city best seen in ordinary warehouse construction — that are also among the cheapest obtainable. But they use them in a way that is, unobtrusively, a grace to the public and private spaces they create.

The roots of a vernacular style can be found in the best public housing projects of the 1930s of which the Williamsburg Houses in Brooklyn (completed 1937) are among the finest. This project was the work of an extraordinary team that included William Lescaze and was headed by Richmond Shreve. Shreve, who was well grounded in large-scale teamwork and the older Beaux-Arts vernacular through his work with Carrère and Hastings, attempted to establish a new order in this superbly designed group. Two of the 12 blocks cleared for the project were closed to create a compound of four superblocks. Within these blocks, 20 four-story H-type buildings (walkups) were set on a diagonal to obtain the maximum number of favorable exposures (30 percent more faced south than in standard developments). The residual spaces between the building and street lines were then filled, on the public side, with shop fronts. On the private side, the buildings (which contained 1600 units) were arranged to create delightful, landscaped plazas similar in spirit, if not in form, to London's 18th-Century squares. Georgian London was again recalled through the use of a honey colored brick (a shade that weathers particularly well) contrasting with the exposed concrete



Williamsburg Houses, Brooklyn, 1937 (upper left). The roots of a new vernacular can be found in this excellent public project, the work of a team that included William Lescaze, and was headed by Richmond Shreve.

Photo: Courtesy New York City Housing Authority.

Riverbend Houses, Manhattan (above right). Davis Brody & Associates. A highly imaginative solution within tight financial restrictions places this project in the best vernacular tradition.

Promontory Apartments, Chicago (above). Mies van der Rohe (1949). Built of common materials and using undisguised loft construction for an exceedingly low cost, it has always been depreciated in favor of the more "elegant" and luxuriously appointed Lakeshore Drive apartments.

Photo: Hedrich-Blessing.

Co-op City, Bronx, New York (right). Herman Jessor. Conventional materials and methods were deployed at an unconventionally vast scale to meet user needs at low cost in a tasteful, vernacular manner.



floor plate to create the modern equivalent of a string course. Although scale and spirit recalled the graces of an earlier century, the plan was thoroughly modern, incorporating several structural innovations. The rooms (of which most units contained three to four) were modestly proportioned, but parquet floors, ample lighting from sides and corners, and well-designed details lent them a quality rarely found in contemporary public or private housing. Through careful management it was possible to keep within the \$12.8 million budget allotted by the Public Works Administration, a modest figure even in depression days.

In the dearth of building activity that marked the war years, the promise of early public projects remained largely unexplored. Curiously, the next viable concept of an urban vernacular came from one of the great formgivers, working, in this case, under relatively restrictive economic conditions. Mies's original designs for the Promontory Apartments (1949) indicated the use of steel and glass, but budget cuts necessitated a second design involving a concrete frame with brick and glass infill. The apartment block was and remains innovative for its use of undisguised loft construction to achieve a cost (\$8.55 per sq ft) that compared favorably with the cost of contemporary slum clearance projects. With costs and aesthetics in mind, Mies provided regular structural plans that involved no expensive changes, and specified simple details and precise joints to avoid leftovers. The resultant living spaces were cross-ventilated and extremely flexible.

Although the cost of Promontory would, of course, be considerably higher today, it should still compare favorably with other projects involving similar construction, while offering a high degree of interior comfort and the kind of sensitive yet unassertive street architecture that defines an urban vernacular.

The projects so far discussed, which are distinctive for their uncommon use of otherwise common methods and materials, achieve their quality largely through articulation of the frame (as well as a sensitive handling of proportions and details) rather than through variations in massing and fen-

estration. For this reason, they suggest a tasteful, unassertive street architecture similar in spirit to that of 18th-Century London. But a successful street architecture demands the occasional focal point — a building that “collects” its neighbors without aggressively overwhelming them. The Georgian solution was to add pilasters and pediment to the central building on each side of a square, punctuating and dignifying the row while retaining its proportions and materials. Robert Venturi's Guild House (1960–63), with great economy of means, achieves a similar effect. The architect capitalized on the complexity of the program to provide a three-dimensional sense of formality, tension, and subtle interrelationships reminiscent of a Mannerist palazzo or Hawksmoor church façade. Yet he achieves these qualities through the sensitive and intelligent organization of the most banal materials — conventional window sashes, red brick with white glazed-brick trim, bold yet simple graphics, and a television antenna with symbolic implications. The fact that such conventional materials were made the stuff of so unconventional a building, dynamic in massing as well as elevation, and achieved at the low cost of \$1 million (\$17 per sq ft), indicates how broad are the deserts of imagination in the potentially green regions of medium-rise public housing.

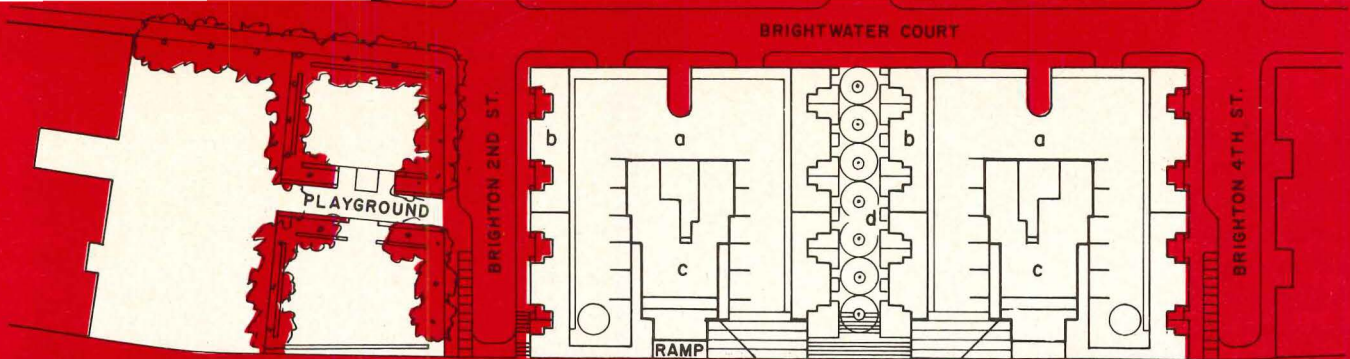
A unique combination of sophistication and banality made Guild House an important contribution to an ordinary language of architecture and an aesthetic advance that satisfied the most educated connoisseurship. However, the aesthetic that informed Venturi's Brighton Beach competition project (1968) was considerably less accessible to the Man of Taste. Consequently, although of all finalists the least costly to build, it lost the competition, winning, however, the minority votes for both first and second prize. The following points paraphrase remarks made by juror Donlyn Lyndon to supply the minority's view. Although their applicability to this project is controversial, they define, in effect, an urban vernacular:

1. The scheme's modesty is appropriate to the scale and location of the project, whose success is independent of major social or technological reform.
2. The scheme respects, but it is not bound by the existing order of the neighborhood.
3. It offers real benefits and dignity for occupants rather than polemic satisfaction to critics.
4. The building method is simple enough to execute well, not meanly.
5. It represents not “more of the same” but is, instead, a thoughtful use of existing possibilities, with especially well-handled public spaces.
6. The minority view does not represent a triumph for “practicality” over “beauty” but rather attempts to relate the criteria for judgment to the conditions of the problem. The words “practicality” and “beauty” both encourage oversimplification.

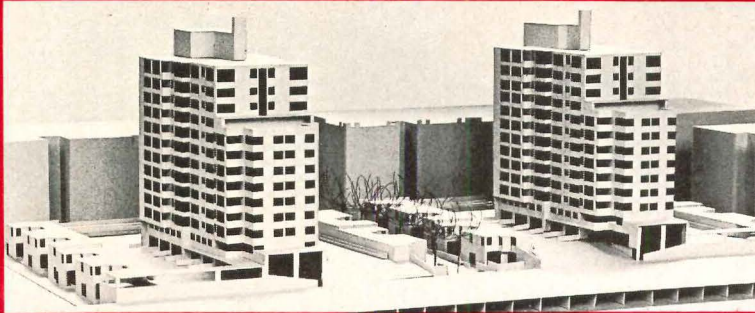
Venturi's sensibility, capitalizing as it does on an



Guild House, Philadelphia. Venturi & Rauch, 1960–63. A sensitive, sophisticated organization of banal elements produced a focal-point building that “collects” its neighbors without aggressively overwhelming them.
Photo: William Watkins



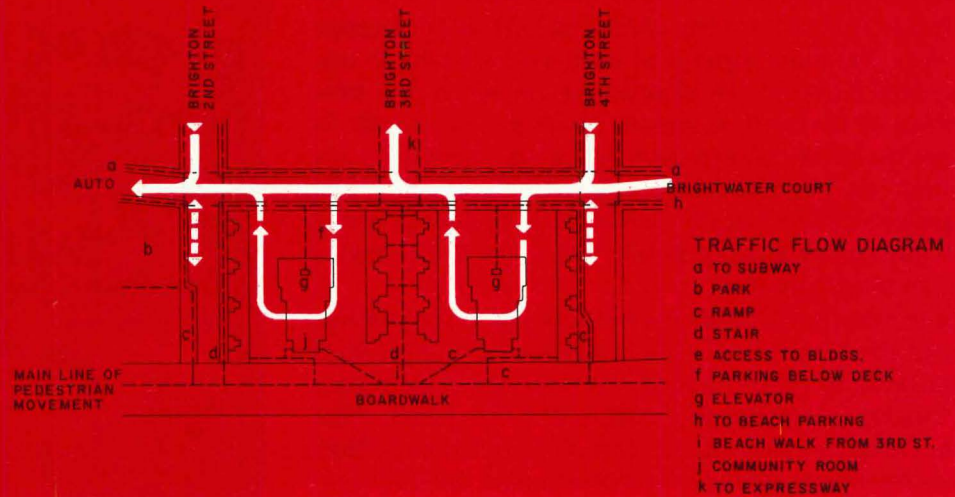
BOARDWALK



Brighton Beach Competition Project. Venturi & Rauch. The scheme "offers real benefits for the people who might occupy it rather than polemic satisfaction to those who consider it."

SITE PLAN

- a DECK
- b LOW RISE UNITS
- c HIGH RISE BLDGS.
- d INTERIOR WAY



unfashionable reality, seems nearly impossible for a generation raised on a precious, "machine-tooled" aesthetic to stomach. As a brilliant and original theorist, he was expected to produce an equally "original" architecture of the sort whose paradigmatic function has been to retard the advent of a tasteful, humane, common denominator.

The firm of Davis Brody & Associates has had more success in seeing its equally reality-oriented programs realized. The prize-winning and well-publicized Riverbend Houses in Harlem, for example, are in the finest vernacular tradition established by the Williamsburg and Harlem River Houses. But, as Brian Smith, the English-born architect in charge of the project notes, they relate more to London County Council and other European housing than to native forbears. The firm's great success seems to lie principally in the following areas:

1. Its ingenuity in solving problems related to legal and financing restrictions while relying entirely on the existing technology.
2. Its sensitivity in developing off-street public spaces.
3. Its concern with the individuality of each unit.

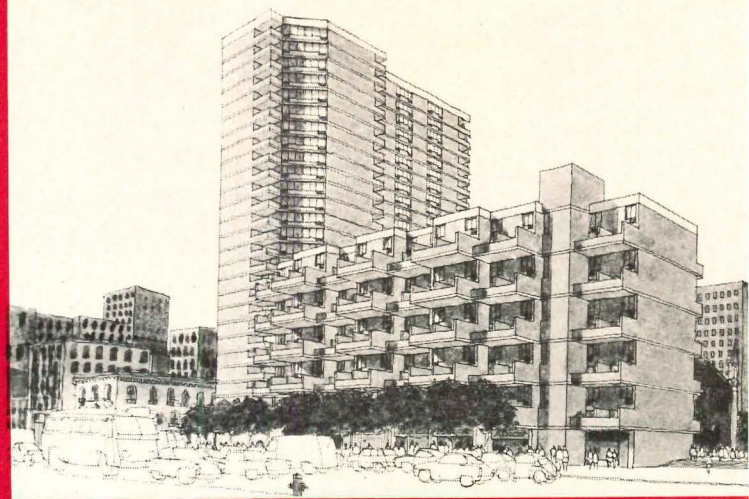
All these concerns are evident at Riverbend where, under the tight restrictions of New York's Mitchell-Lama Act and an extremely low budget (apartments to be bought for an average of \$414 per room and maintained at a monthly charge then limited to \$30), they developed a highly imaginative, humane community. Masonry costs were reduced by redesigning the brick to a 5½" x 8" module; elevator costs were cut by having duplex blocks share the elevators of tower units; and legal requirements were satisfied by providing secondary egress through adjacent apartments. In addition, generous public spaces were developed on elevated playgrounds while private entrances that lead to the duplex apartments from raised walkways yield a sense of individuality. As another economy move, the exposed and textured concrete structure was projected since a more perfect finish would have been required had the brick been laid in the same plane. The resulting image of warm color contrasts, varied massing, and interesting surfaces, stands out gemlike in the gray sea of monotonous public housing surrounds it.

The realism and sensitivity that characterize the firm's approach to Riverbend are continued in two

new New York City projects at various stages of development. East Midtown Plaza, whose first phase (512 units) is nearing completion, is again Mitchell-Lama funded with a higher, but still painfully low, \$50 monthly maintenance limit. Conventional reinforced concrete frame with flat-slab construction was used throughout but an unconventional square brick was again designed to cut masonry costs. In addition, a special molded brick was used for the towers' 135° angled corners. In its concern with street-level space, Davis Brody encouraged the closing of 24th Street, and the development of sheltered plazas free from cars, both moving and standing (garaging is underground), incorporating buildings already on the site. But since 23rd Street is a major crossroad, its busy commercial character was preserved through shopping facilities in the relatively low duplex blocks that line the street between First and Second Avenues. Apartment access here is through recessed, private entrances reached from an exterior corridor on the sheltered side of the duplex blocks. The individuality of each unit is further emphasized through the alternative recession and projection of the wall, a system developed primarily in response to the alternative egress requirement. Although as at Riverbend, concrete is exposed and spandrels project about one inch, a shallower spandrel and brick gallery fronts cause the latter material to predominate.

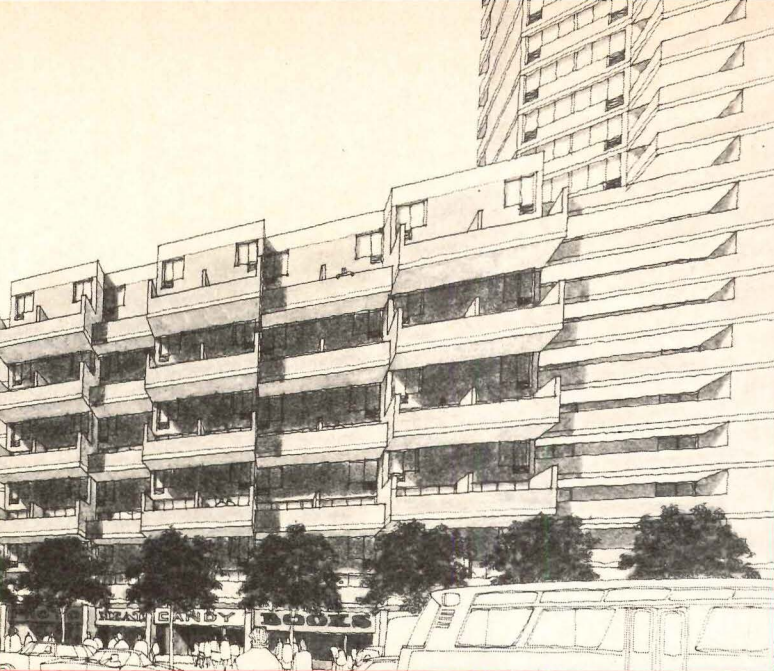
The Lambert Houses near Bronx Park are another Davis Brody project, still in the design stage, that required even more radical solutions to the problems of inadequate financing (221.d.3 FHA loan). The firm found, as have other New York architects, that load-bearing masonry construction was the only system that would meet present mortgage limits. Since the building code now allows bearing-wall thickness to be determined by calculation, it was possible to erect 8-in. exterior walls and 6-in. corridor walls for the six-story buildings. The alternative projection and recession of these blocks, again developed as a clever solution to the alternate egress requirement, added benefits in adjusting to the site's odd angles and provided visual dynamics as well. Private green plazas and relatively public, streetlike corridors are developed, both free of traffic. The airiness and variety thus created contrast markedly with the cramped, anonymous housing that makes of the Bronx a lower middle class necropolis.

The careful attention Davis Brody lavishes on outdoor, urban spaces is not equaled elsewhere in the Bronx in the vast regions of Co-op City. The achievement here is clearly one of cost and scale, made possible through the formidable size of the operation and the experience of the United Housing Foundation. Despite its relatively arbitrary site plan, the project, so recently discussed in *P/A* (Feb. 1970), has been among the most successful in defining an urban vernacular through its tasteful use of ordinary materials (red brick and concrete block) and methods (conventional slab and beam construction). It is a

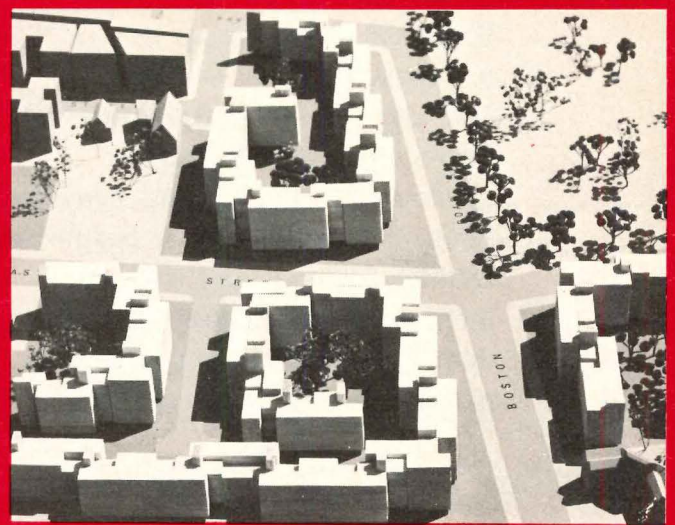
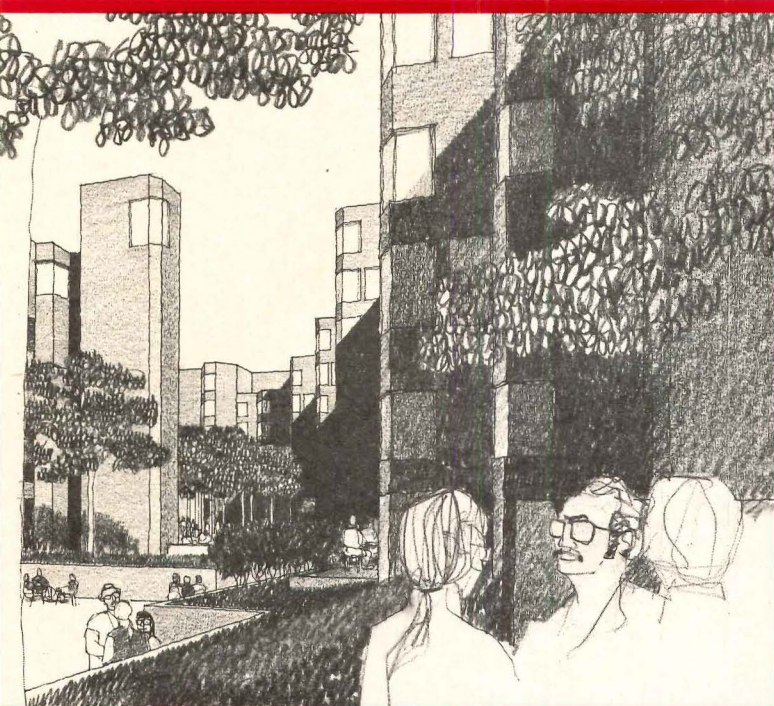
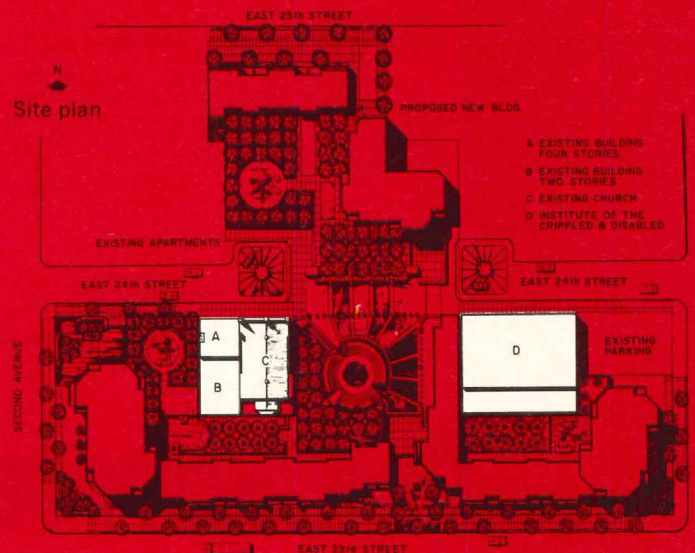


tribute to architect Herman Jessor that so humane an environment could be created at so vast a scale, and at a cost accessible to the old Bronx residents who are Co-op City's principal applicants.

The imagination and responsible social concern of the architects whose work has been collected here has been manifested in rather unspectacular ways — ways that the profession has tended to devalue and ignore. The Williamsburg Houses, for example, which for the first time combined new European design principles (through the work of Swiss-born Lescaze) with the American experience in large-scale organization (through teamwork and the leadership of Shreve) is hardly known to contemporary planners and rarely viewed as a landmark in the art. Similarly, Mies's Promontory Apartments, built of "common" materials with buttress-like columns and a winged plan, has always been depreciated in favor of the other more "elegant" and



East Midtown Plaza, Davis Brody & Associates. Since 23rd St. is a major cross road, its busy commercial character was preserved through shopping facilities in the relatively low duplex blocks.



Lambert Houses, Bronx, New York. Davis Brody & Associates. Again, an emphasis on green, interior spaces in a low-lying complex that uses masonry construction to meet present mortgage limits.

luxuriously appointed Lakeshore Drive buildings. Venturi's Brighton project, which, through private circulation, has already been influential, has never been published in the major professional journals. Co-op City, on the other hand, has frequently been offered to the professional public, but largely (except in P/A) as a target for attack.

Clearly, what these extraordinary buildings share is an ability to express reality-based aesthetic and functional solutions that transcend the ego-involvement of each designer. There is nothing capricious, eccentric, or willfully different about these projects, so that they might all peaceably coexist in the same neighborhood, while retaining their unique qualities. This notion seems remarkably threatening to designers in a nation raised on the myth of the rugged individual. Yet such attitudes toward individuality have produced an insidious paradox — for in confining professional praise and attention largely to

products of genius, we have created an architecture of deadly mediocrity, and denied ourselves the possibility of a democratic urban vernacular.

Nevertheless, the social, economic, and technological verities in which the projects surveyed here seem grounded are, assuredly, not eternal. If they suggest a valid vernacular for today, they cannot for tomorrow when these realities shall have altered. And change they must, for there is something markedly wrong with an economy that obliges the most advanced technology in history to use the most ancient structural principles known to men. The social revolution we are now experiencing will undoubtedly call on new technologies and develop new designs for living that reflect more adequately our needs and our potentials. But until that nascent revolution matures, the projects assembled here remain our best urban exemplars of a civilized contemporary environment.

Stephen A. Kurtz

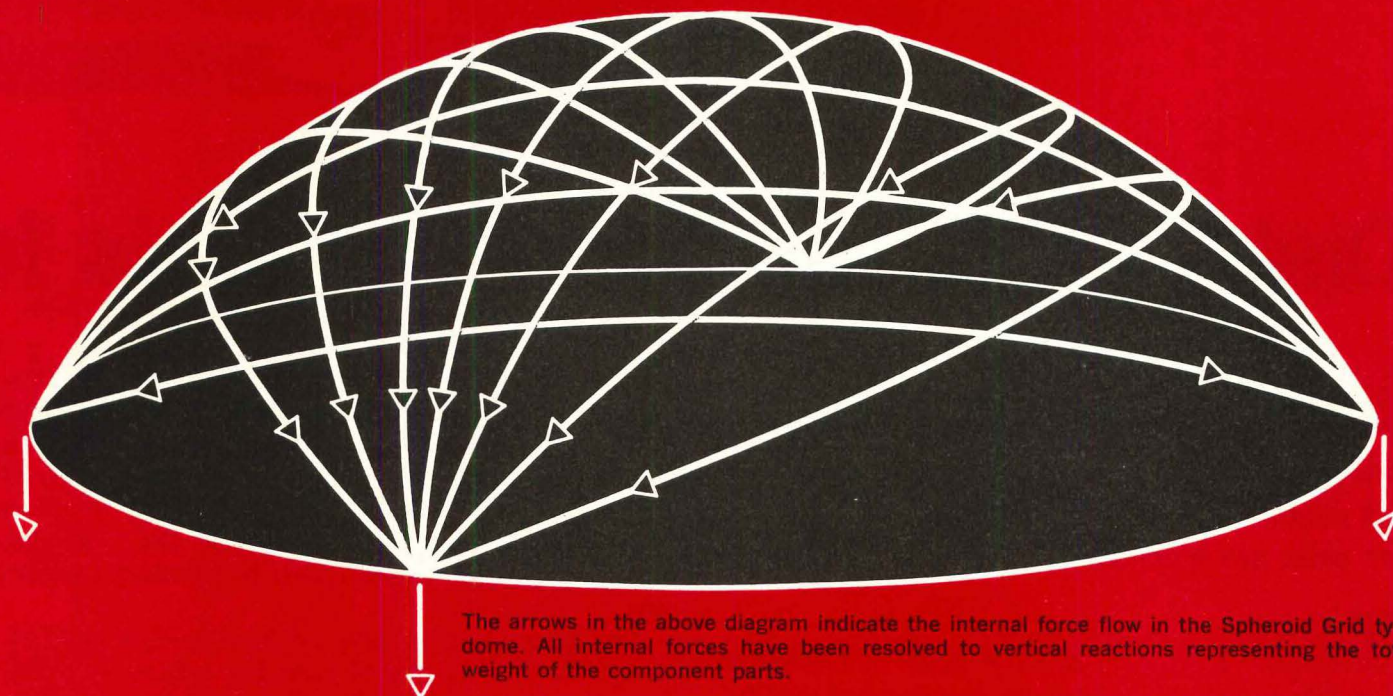
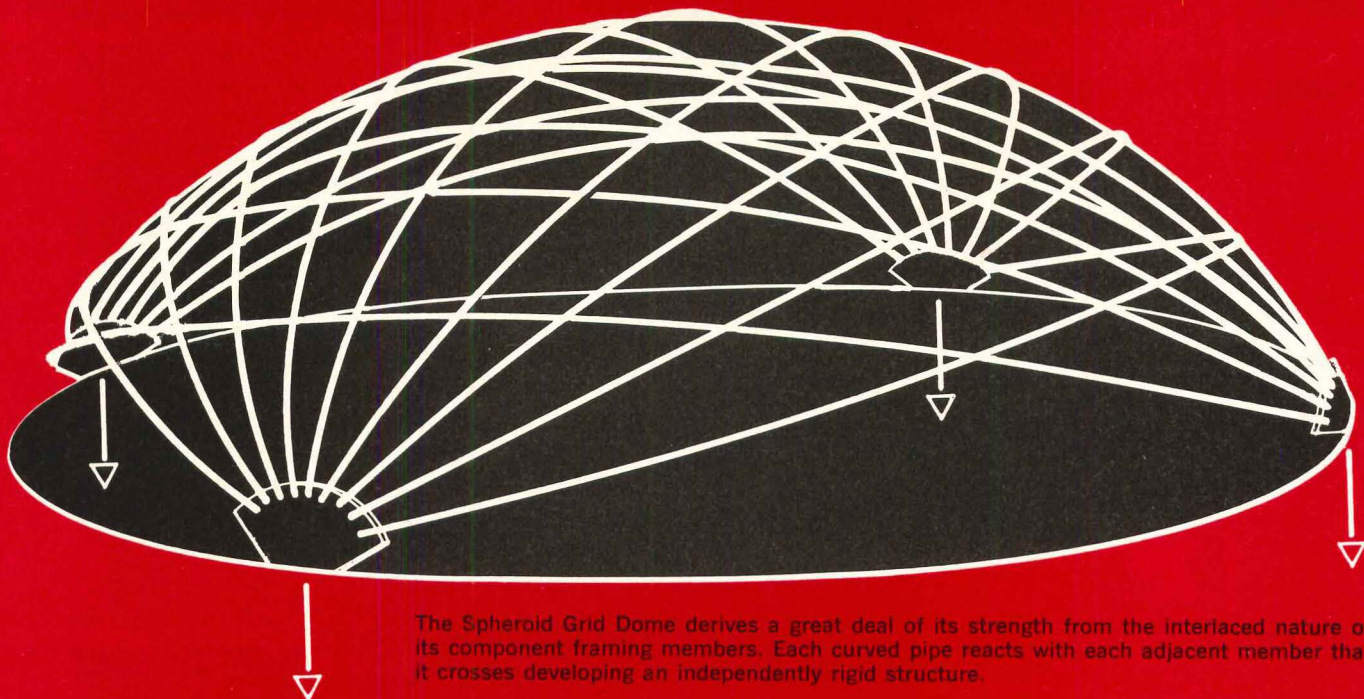
The Spheroid Grid Dome

Originally designed as a temporary display enclosure, Ted Litzenberger's Spheroid Grid Dome concept has found applications well beyond expectations. The addition of a permanent roofing material and a slight increase in component diameter demonstrate greater capabilities of the Spheroid Grid system.

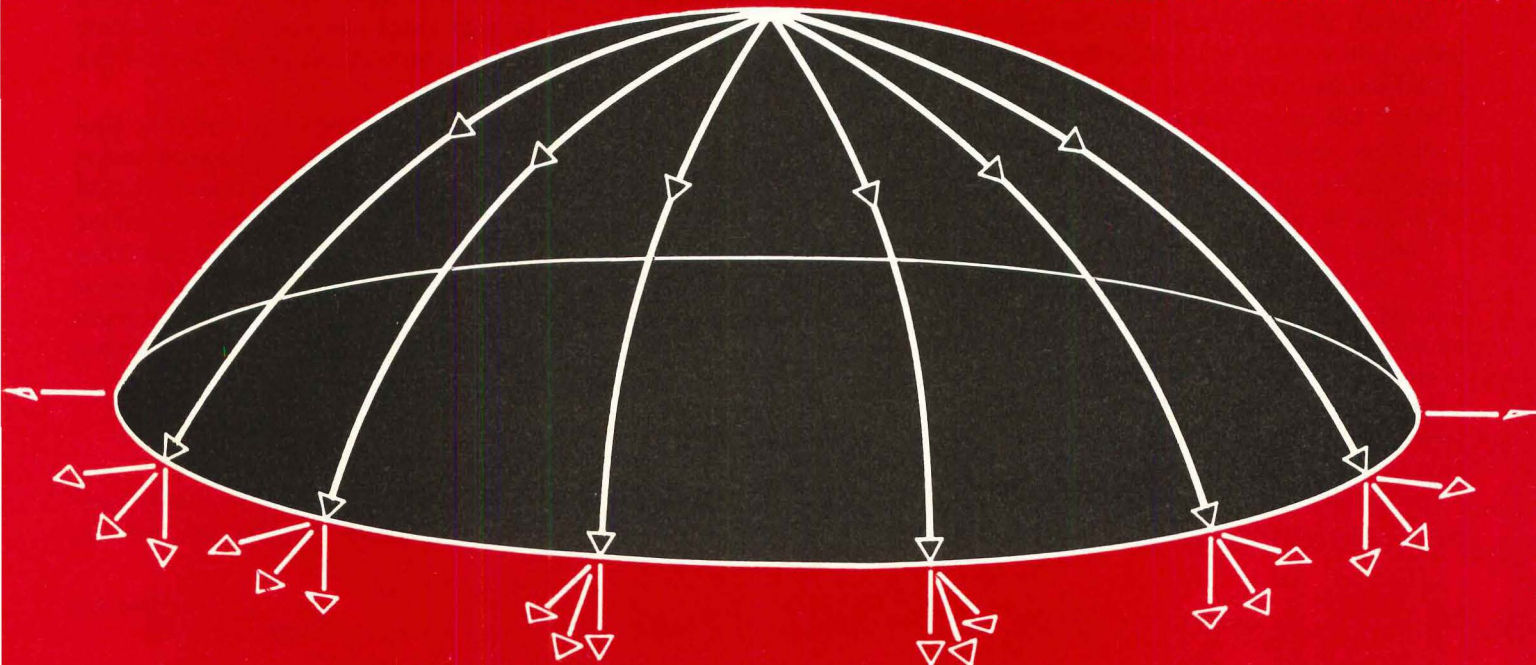
The Spheroid Grid Dome concept was originally developed for use as an exposition display area where ease and speed of erection are primary advantages. Theodore Litzenberger, of Harris Reed and Litzenberger of Tacoma, Washington, constructed the first such dome with equal length, curved sections of $\frac{3}{4}$ in. pipe. That lightweight hemispherical dome was inexpensive to build and readily erected by unskilled labor. The only skilled labor used was that of a welder, which would have been unnecessary if, instead, a U-shaped clamp had been developed for the pipe intersections. The U-bolt would also facilitate disassembly and re-erection of the dome. The $\frac{3}{4}$ in. pipe used for the dome can be shipped to the site in straight pieces, and curved on location by workmen. The interior of the dome has nearly vertical side walls and requires no internal structural supports. Only concrete footings are needed for ground support. A tension ring or buttress-type footing is unnecessary, since all forces are translated into vertical reactions.

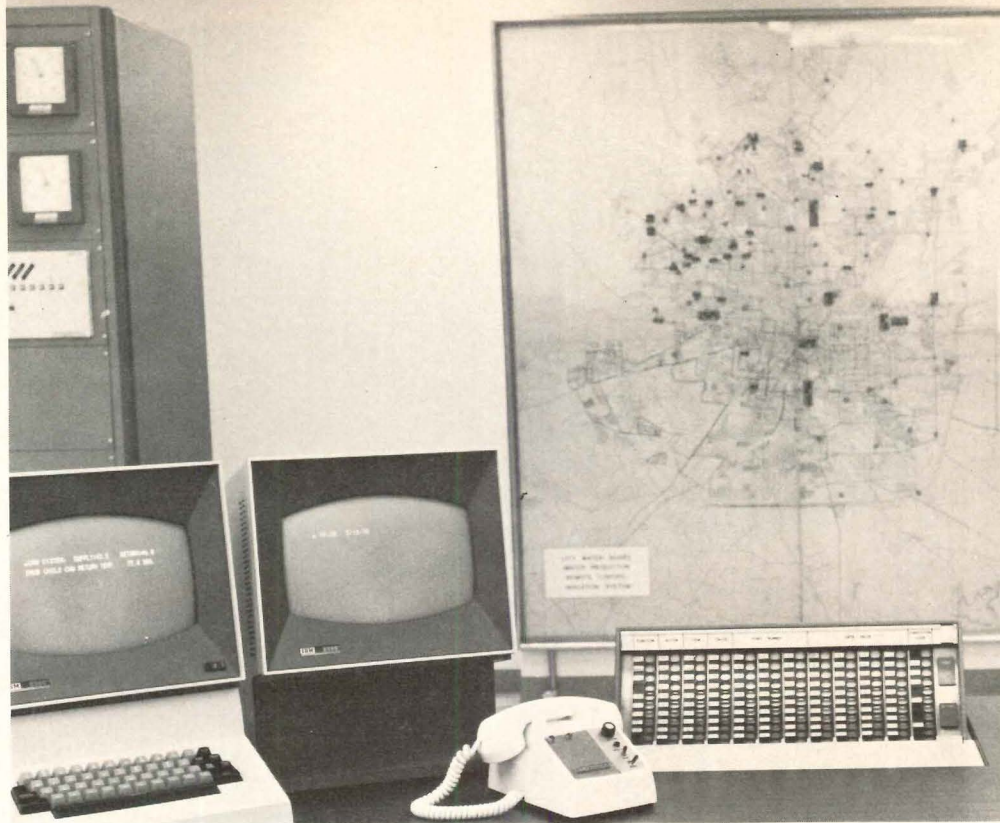
Prefabrication of the dome is remarkably simple, because all the structural members are the same length and are bent to shape on site. The hemisphere derives its strength from the interlaced framework of pipe. Further advantages of the dome include its resistance to unbalanced loads and lateral movement as well as its seismic stability.

If the diameter of the original 32 ft dome were doubled, it could be erected with 2 in. pipe. The idea of a 64 ft span using 2 in. pipe seems incredible since conventional domes of this diameter require up to 30 in. deep laminated wood beams. The spheroid grid dome is basically a simple framing concept. It allows considerable cost savings by using a minimum of materials and fabrication, by allowing easy transport and erection, and by the use of light steel members that derive their strength from the interwoven nature of the structure itself. The covering material can be a temporary, clear polyethylene or a permanent concrete-sprayed wire mesh.



In conventional domes, the forces caused by loads on the component members must be counteracted by massive concrete footings that resist lateral as well as vertical movement.





District Cooling/Heating Plants for

Ten companies are actively involved in the district-plant approach to air conditioning. Some of the most successful installations, from an over-all planning and economic point of view, are discussed.

The sale of chilled water and steam or hot water for year-round air conditioning is a new and rapidly growing business which began almost as an afterthought.

Nearly 100 years ago the New York Steam Company, now part of Consolidated Edison, began to sell piped-in steam heat as a fortuitous by-product of electric power generation. Eight years ago the Hartford Gas Company, now Connecticut Natural Gas, began selling gas-produced chilled water for air conditioning to fill in the valleys of its sales curves.

Today, companies across the country are vigorously marketing this utility approach to air conditioning as a profit-making venture without regard to generating power or consuming gas. Evidence of this is the fact that several companies have been founded recently expressly to provide this new service. They join gas utilities, a pipeline distributor, and a municipal water utility in the competition for customers.

Architects in many parts of the country are now confronted with choosing between these district cool-

ing/heating plants and conventional on-site systems. District plants currently serve or are being built for a variety of big building complexes ranging from private homes to office buildings to medical centers to central cities. They are located in Hartford, Houston, Tulsa, Oklahoma City, Washington, D.C., Omaha, San Antonio, and several points in Southern California.

The 10 companies now in this business have already invested a total of over \$60 million in plant, equipment, and piping, according to William J. Bailey, president of Carrier Air Conditioning Company, which has supplied large water chilling machines to all these firms. He said there are central plants now in the planning stage which could easily double the current investment figure.

These companies design, build, and operate district plants to produce chilled water and steam or hot water which is piped underground to customers and then returned to the central plant. All the customer needs is his own air treating equipment to heat and cool air within his building. He is billed according to the quantity of water or steam received, and according to the heat his building adds to the chilled water or subtracts from the hot water or steam.

Economic and Physical Advantages

The decision to purchase this service is usually economic. Funds saved by "renting" heating and cooling



All operations of the City Water Board's district plant in San Antonio are monitored in this central control room.

Central Cities

energy, as opposed to owning boilers and chillers, can be used for a more extensive building or foregone entirely. In some cases, developers want reduced first costs because of a limited ability to borrow, and a project may be killed before it can even begin if the investment required is too heavy.

There are also physical advantages. Cooling towers are removed to remote areas where noise and water spray is not objectionable, and penthouses can be used for other purposes that require less supporting structure. The removal of chillers and boilers avoids unnecessary excavation of subbasement space in some cases and frees usable space in others, particularly in view of the current practice of placing this equipment on mechanical floors at mid-building in tall structures. Square footage that is built, yet saved, can be important in a commercially rented building where space means cash.

In an owner-occupied office structure, however, there is less need for income to pay mortgages and retain profit because the property in its entirety is an expense item incidental to the operation of the business. In fact, a higher first cost may be an advantage to such a firm as a tax shelter for some of its income. The physical plant contributes heavily in calculating a double-declining balance for depreciation.

Wage rates and trends for operating engineers, as opposed to the utility rate for steam and chilled water, may be of paramount importance in determining

whether to purchase this service or build an on-site plant. Capable personnel to run the chillers and boilers may not be available, even if wages are comparably favorable.

Charges for district service are usually based upon the energy used multiplied by an established rate. The City Water Board of San Antonio, Texas, charges a flat \$1.10 per 1000 lb of steam and has a sliding scale for chilled water of .07 cents per ton-hour for the first 2500 ton-hours, .05 cents PTH for the next 75 ton-hours per ton of demand and .02 cents PTH for all ton-hours in excess of this. Increases are fixed to any future increases in the cost of electricity, gas, or labor to the Water Board.

Cost Comparisons

The Houston Natural Gas Company has released data showing yearly comparisons of operating costs for certain building configurations and uses. The study includes the following:

(1) A 220-unit motel of 104,000 sq ft, with an assumed 260-ton cooling and 4.7 million Btuh heating load: \$39,914 annually for an owner-operated plant, and \$27,785 annually for comparable service from Houston Natural.

(2) A 124-unit apartment project of 92,226 sq ft, with a 150-ton cooling and 4 million Btuh heating load: \$22,235 annually for an owned plant and \$18,614 for HNG service.

(3) A 15,000 sq ft supermarket with equipment producing 100,000 ton-hours per year: \$5030 for an owned plant and \$4750 for HNG service.

Obviously, the motel gains the most from district service, especially in view of the high rent return in relation to square footage and first cost. The apartment project has a healthy return in favor of HNG as well. But the wisdom of using this service for a meager \$280 savings on the supermarket is questionable when tax depreciation savings on owned equipment are considered, when inventory turnover and not rental is the income source for the building, and when no appreciable selling space would be added by the elimination of heating and cooling equipment.

The Energy Systems Division of Northern Natural Gas Company, a pipeline distributor, is operating a 12,000-ton district plant in Omaha, Nebraska. Based on economic feasibility studies, Energy Systems estimates that a conventional air conditioning system for a 200,000 sq ft building would have an annual operating cost of \$145,900, while the district plant service would cost \$133,100. First cost of boilers and chillers to the building owner was estimated at \$393,400 versus the \$3400 expenditure for pressure and flow regulation equipment required by district service.

There are good reasons why district service can cost a building owner less than operating his own plant. Chief among these is the district plant's diversity factor, which means that cooling and heating loads can be shifted from building to building to

meet varying demands. This results in lower over-all capacity for the district plant as opposed to many smaller plants, and eliminates the standby capacity often designed into an owner-operated plant. Also, large chillers cost less per ton to own and operate than several small chillers.

Styles of Operation

District plants are operated in two distinct styles, for single customers and for multiple customers.

The one-customer plant is similar to privately owned plants such as those operated by universities and other institutions. A major operator of one-customer plants is Uni-Plant Corp., a nonutility subsidiary established by Pacific Lighting Corp. of California expressly to sell district service to single customers.

Uni-Plant's largest customer to date is the McDonnell-Douglas Space Systems Center in Huntington Beach, Calif. In this case, the customer was able to erect two extra buildings on the investment it would have made if it supplied its own heating and cooling. The plant opened in 1963 with 2500 tons of cooling capacity, and has since been expanded to 8000 tons.

Most recent of the Uni-Plant projects is a central plant which will serve the Disneyland Hotel adjacent to the famed amusement park. The new facility will heat and cool most of the existing 600-room hotel, a new 350-room addition, and a future exhibit center, restaurant, and banquet hall.

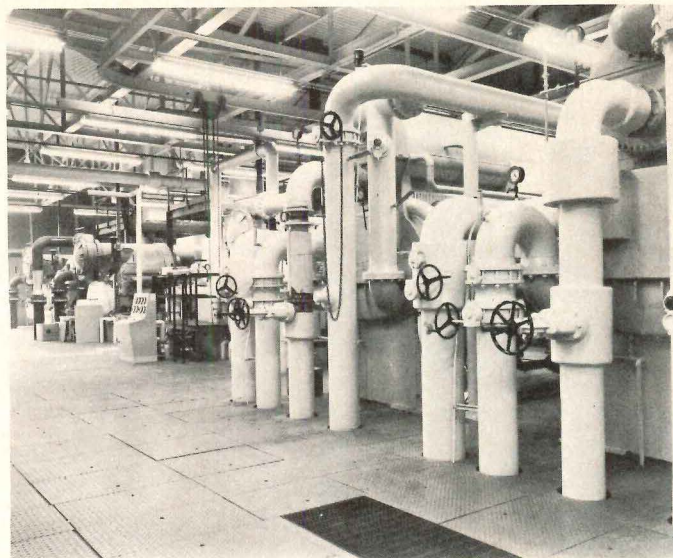
Other companies currently operating single-customer plants, but capable of building multi-customer facilities, include Washington Gas Light Company in Washington, D.C., and Ohio Energy Systems, Inc., of Columbus.

Washington Gas Light owns and operates a 3000-ton district plant serving Watergate, the capitol's luxury apartment community. When completed, Watergate will contain about 1000 cooperative apartments which will be cooled and heated from the district plant. Tenants are billed on a flat rate depending upon size of the apartment.

Ohio Energy Systems, an independent company founded in 1967 expressly to design, build, and operate district plants, recently received a 26-year contract to provide heating and cooling to the Queen Mary. The former Cunard luxury liner is now owned by the city of Long Beach, California, and is being refitted as a permanently docked convention center, hotel, and museum of the sea. The Ohio Energy systems plant is being built a quarter-mile from the Queen.

Historically, district plants have followed a pattern of exclusive service to one subscriber. An example is New York's John F. Kennedy International Airport. In 1957 the Port of New York Authority, a nonprofit governmental organization, installed a large district plant to serve the airline terminal complex.

Other nonprofit organizations have ventured into



View of Uni-Plant Corporation owned district plant operated for the McDonnell-Douglas Space Systems Center at Huntington Beach, Calif.

district cooling. The first district plant to heat and cool individual private homes was started at River Park Cooperative Homes in Washington, D.C. The plant, like the 134 townhouses and 385-unit apartment house, is owned by the residents.

The newer River Park West has taken another approach. For-sale townhouses have individual heating plants and use district chilled water. Rental townhouses are served by both chilled water and steam from the developer's central plant. The cooling charge for the sale units is part of the monthly maintenance fee of the owner's association.

Universities are perhaps the most common users of central heating and cooling plants. The world's first true central plant began operating at Southern Methodist University in Dallas in 1940, and today scores of colleges and universities in the U.S. and Canada either own or are building district plants to serve their classroom building complexes.

Early Projections

The year 1940 also saw the first public mention of utility-operated district plants. Dr. Willis H. Carrier, the "father of air conditioning," predicted that within 25 years public utilities would be piping chilled water under city streets to air condition buildings.

That dream came true in 1962, three years short of the goal, when The Hartford Gas Company began operating a district plant serving downtown Hartford. The plant has a 15,000-ton cooling capacity and supplies chilled water and steam to 14 major customers. Any new or existing building can be tied into the distribution system so long as there is sufficient capacity.

Since then, several companies have entered the multiple-customer business. Energy Systems' plant in Omaha can serve any building on a 1.5-mile loop around the downtown area. The City Water Board of San Antonio operates its district plant on the site of

the now-closed HemisFair '68. Built to serve the fair during its six-month run, the plant now serves permanent public buildings on the site and has extra capacity available for future customers.

Central Energy Corp., headquartered in Dallas, operates both single- and multiple-customer plants. Customers include the South Texas Medical Center in San Antonio, the University of Texas campus at El Paso, and the university's medical branches in Dallas and Galveston. The latter plant was purchased from the university and will be expanded by Central Energy.

Another subsidiary of Pacific Lighting Corp. is Central Plants, Inc., established to serve multiple customers. Among the company's five major projects is Century City in Los Angeles. The former 20th Century Fox movie lot was purchased by Alcoa, which leased 80 acres back to the studio, and is redeveloping the remaining 180 acres for a number of customers including hotels, office buildings and apartments. All projects use the Central Plants service except two apartment towers which were built prior to completion of the district plant.

Multi-customer Plants

Houston Natural Gas Corp. operates two multi-customer plants in the Houston area. The first plant, opened in 1964, provides chilled and hot water to Nassau Bay, a commercial-residential project adjacent to the NASA Manned Spacecraft Center. Another plant, with a projected cooling capacity of 50,000 tons, serves the Texas Medical Center. In addition, a plant serving the new Houston Natural building is also designed for expansion to provide heating and cooling for neighboring buildings in downtown Houston.

Oklahoma Natural Gas Company, operating through a subsidiary known as Thermal Systems, Inc., is building district plants to serve downtown Tulsa and Oklahoma City. First customer of the Oklahoma City facility will be the city's new \$22.9 million convention center.

Before a utility or one of its subsidiary companies will build a district plant, there must be one customer or a number of customers with enough demand to make start-up feasible. Energy Systems began in Omaha with three customers, the new Woodmen of the World Insurance Society building and two existing buildings, the Omaha National Bank and the Diplomat Hotel. New projects that have since tied into the distribution loop are the U.S. National Bank, the Omaha Police Department, the Omaha Hilton Hotel, and the expansion of the Northwestern Bell Telephone Company.

What happens to a building concept when district plant service is part of the program depends upon individual considerations. Northwestern Bell's expansion was typical of many telephone facility expansions, with new structures built on the same property over many years. The latest one was intended at the start for district plant service. But now

existing structures are to be converted to district service to gain space formerly occupied by boilers.

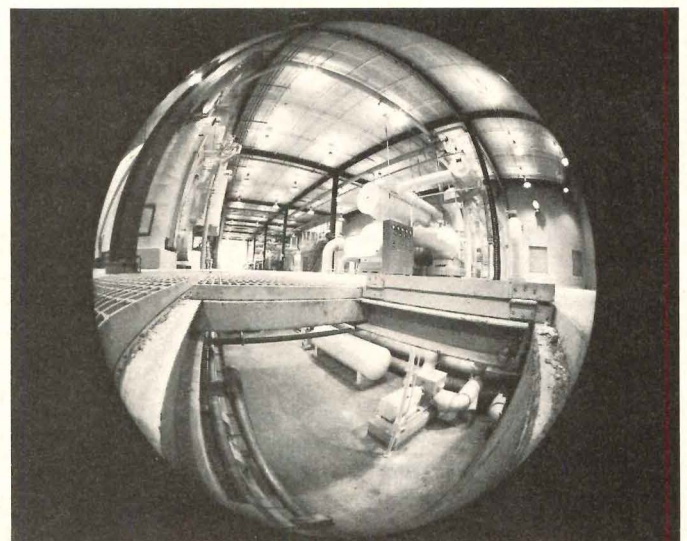
At first, utility steam lines will be tied directly into radiators and the existing air conditioning will continue to be used. But after windows are sealed and ductwork installed, the old systems will be replaced by high velocity ducted heating and cooling. Ducted systems will also be used in the Woodmen of the World building and the U.S. National Bank.

A notable exception to the ducted air system is the Omaha Hilton, which rises from a base that contains service and commercial spaces. The base and an 18th floor dining room are served by ducted systems, but each guest room is equipped with an individually controlled fan-coil unit.

Future Systems

As district heating and cooling becomes more widespread, systems will grow in sophistication. One prospect for the future is relieving subscribers of operating their own air handling systems. These systems may be adjusted from the central plant, with operation based on conditions monitored remotely from sensors in the buildings. In addition, routine and emergency maintenance will be available as part of the district service. As a first step to such services, the Woodmen of the World management is studying possible joint monitoring with its tenant, Omaha National Bank. Eventually, Energy Systems may provide this service for both parties.

Architects considering the use of district service in areas where it is available or is being considered should contact the supplier as soon as possible. One of the limitations of this system is the inability to expand line capacity once pipes are set. Pipe diameters and lengths are critical, and any firm installing a system will size these lines according to projections of possible markets for the service. Once capacities are reached, further extension of service may be impractical regardless of the ease with which new machinery may be installed at the district plant itself.



Houston Natural Gas Corporation plant serving Nassau Bay commercial/residential project adjacent to NASA Center.

Chemicals in Finishing: New Technology, New Technologists

By **EUGENE BAZZELL**, Vice President, National Association of Decorative Architectural Finishes

A new breed of contractor, the expert in architectural surfaces, is making his presence felt on the construction scene. He is a contractor concerned with decorative architectural finishing as a major activity in its own right.

To such a contractor, the key objective is an installation which can meet the functional and aesthetic requirements imposed by the architect in terms of the building's design function. He approaches that objective by choosing from among the increasingly large variety of available surfacing systems and tailoring the surface to the specific requirements of the building. He is equally able to handle vertical and horizontal surfaces — interior and exterior — as well as those surfaces which are neither vertical nor horizontal and which may be both exterior and interior.

Unlike conventional surfacing contractors, he is a materials expert. He has to be. The variety of surfacing systems spawned by the prolific imaginations of the chemical industry requires advanced technological understanding on his part.

Such contractors have existed within the construction industry for about 40 years. They've been popping up here and there ever since seamless chemical finishes were first developed.

This specialty-coatings field began modestly enough with cold-glazed cementitious wall coatings, a concept thrown off, almost casually, from the explosion in architectural techniques that took place in Germany in the late 1920s. Parallel to the subsequent

growth in seamless wall coatings, monolithic floorings were being developed. One of the earliest was magnesium oxychloride. (The very earliest, of course, was terrazzo.)

Growth of Plastics

It was the tremendous growth of the plastics industry after World War II that boosted seamless architectural finishes into importance. But architects and builders for years hesitated to avail themselves of the advantages of these new finishing systems, for two sound reasons. One was confusion over what the specific advantages — and disadvantages — really were. The other was doubt about which craftsmen, contractors, or unions were really qualified to handle the new systems.

The latter problem has recently been alleviated. With the formation of the National Association of Decorative Architectural Finishes, the framework was set up for clearly identifying the expert craftsmen. Then, last summer, NADAF and two unions, the Bricklayers, Masons and Plasterers International Union of America and the Brotherhood of Painters, Decorators and Paperhangers of America, made a tripartite agreement to settle all jurisdictional disputes without recourse to work stoppage. That agreement assures builders and architects of qualified mechanics in seamless finishing and of smooth work progress at the job-site.

The problem of selecting from the variety of finishing systems now being marketed — the confusion

arising from the plethora of choices — is often confounded by the fact that the architect's usual source of information is the manufacturer's promotional material. The valid source for reliable data are the people who work with these products day in and day out. These are the specialty-coatings contractors who have come to NADAF. And, since the Association selects and screens its members carefully, they exhibit their NADAF membership with some pride. Thus, architects and specifying authorities can look for the specific technological expertise they seek, and for the advice and counsel on architectural finishes that they need.

Decorative architectural finishing has proved to be a totally new technology. It borrows from older crafts, of course, but it involves new concepts, new materials, and new techniques. Since many of the systems are actually formulated as they are applied, the finishing contractor must know some of the techniques of the manufacturing chemist.

New Technology and Its Limitations

The new technology includes whole families of organic and inorganic formulations, applied in a variety of ways, and capable of withstanding a broad range of environments and functional requirements. No one decorative finishing system can meet all conditions of service and aesthetic requirements for walls, floors, or other surfaces. There is no such thing as a universal finish. Any system that

pretends to solve all problems must be a compromise.

It is possible, however, to tailor a system to specific service conditions within reasonable cost criteria. Installation cost, of course, is only a minor component of total cost. Expensive maintenance or frequent need for repair or replacement can quickly cancel savings from low installation cost.

Types of Finishes Available: Their Limitations

There are two broad classes of decorative finishes: organic and inorganic. The inorganic finishes are the older and smaller class; in large measure they have been superseded by newer organic formulations.

Inorganic finishes for vertical surfaces can be grouped into cementitious and noncementitious coatings, plus certain surfacing agents used to protect concrete underlayments: sodium silicate, magnesium and zinc fluosilicates, and silicon tetrafluoride. Among floor surfacings, the inorganic class would include the cement terrazzos and magnesite (magnesium oxychloride).

Organic finishes are generally classified as thermosetting, thermoplastic, and elastomeric. The elastomers are thermoplastic materials possessing significantly different physical properties. The organics can all be used as wall coatings. Some can be used, without additives, as floor coatings; some require additives or aggregates if they are to serve as load- or traffic-bearing surfaces.

Two-package thermosetting mate-

rials include polyesters, urethanes, furans, and polysulfides, plus simple and complex epoxies. One-package thermosetting materials include alkyls, epoxy-esters, and certain urethanes. The two-package systems are generally employed for decorative architectural finishing. The properties of the two-package systems (one is the resin, the other a catalyst or hardener) are, in the main, superior to the one-package systems.

Many conventional coating materials are thermoplastic: waxes, greases, bituminous emulsions, asphalt, coal tar, and most rubbers and silicones. Among newer thermoplastic materials, one of the most prominent groups is the family of vinyls: alcohols, chlorides, acetates, chloride-acetates, butyrals and formals, plus vinylidene chloride. The most commonly used thermoplastic coating formulations are based on vinyl alcohol, chloride, or acetate.

The elastomers are a special category of thermoplastics in which elasticity is inherent in the material. This category includes the so-called synthetic rubbers: acrylic latex, styrene-butadiene, neoprene and hypalon.

Cold-glazed inorganic finishes are among the oldest of specialty wall coatings. These formulations have largely given way to vastly improved noncementitious formulations.

Inorganic coatings are often specified for interior use because they are fireproof, easily maintained, and totally insensitive to deterioration effects of ultraviolet exposure, oxidation, or moisture. They possess the same coefficient of expansion as

masonry backing materials, and are thus not susceptible to shearing due to temperature changes.

No specialty wall coating marketed today is completely inorganic. All are made up with organic resins added to increase tensile strength, impact resistance, or adhesion. If the resin content is held to about 10 percent, the essential attributes of the organic constituents predominate for the life of the coating. Organic content substantially greater than 10 percent reduces the effectiveness of the inorganic components.

Inorganic coatings in interior applications are often glazed; that is, a clear, nonyellowing glazing coat is applied over the final color coat. The resulting high gloss virtually eliminates the possibility of stain penetration, thus minimizing maintenance. To prevent glare, the coating can be cured to a slightly irregular texture, which diffuses incident light.

Inducing a Variation in Surface Texture

Variations in surface texture can be achieved through the addition of aggregates. Inorganic formulations can hold aggregates from the very fine to the very coarse. Exposed-aggregate coatings are effective for both interior and exterior surfaces. They can be left either in their natural state, or glazed to bring out the colors of the aggregates. Sound-absorbent aggregates are often used for acoustically treated ceilings.

The terrazzo concept has a long and honorable history as an inorganic

New chemical finishes have swamped the architectural market in recent years and have created a new technical field that deals with the proper use of surfacing chemicals. This discussion continues by defining the different types of chemicals in use today.

floor surfacing because of its extraordinary design flexibility. It can be formulated in a broad spectrum of colors and, through the use of various sizes and shapes of marble chips, can be made to serve as a textured accent to both interior and exterior design. Recent developments, such as monolithic terrazzo in thin layers has increased the usefulness of terrazzo while lowering its cost.

Previously, there have been restrictions on the use of the old cement terrazzo. For instance, cement terrazzo could not be used in areas subject to acids or strong alkalis; thus, under the soup kettle in an institutional kitchen, acid resistant flooring materials such as the organic terrazzos should be used. Sand and cement mixtures are attacked by even the mild acids in food and fruit juices.

Troweled composition floors can be completely inorganic, or can be mixtures of organic and inorganic material. Mineral compositions like magnesite are particularly useful in the renovation of old buildings, and can be used to level over uneven wood floors. Magnesite is fire-resistant, vermin-proof, and impervious to most oils and greases. It is an excellent underlayment for other resilient floors, since it fills irregularities rather than bridging over them. It can also be bonded to concrete sub-floors. Although intermittent wettings-down help magnesite, it should never be used where water stands continuously.

Asphalt types of troweled flooring are usually composed of sand, cement, and an asphalt emulsion. Sometimes heavier aggregates, like gravel, are included. Asphalt composition floorings are often used to cover loading docks and interior areas where water puddles on the floor. These floorings are adversely affected by hot weather, which tends to soften them, since asphalt is thermoplastic.

Thermosetting resins (mainly polyesters and epoxies) are most useful in industrial applications, to withstand corrosive environments. The cured films are dense and hard, providing maximum resistance to common chemicals and fungal growth. The coefficient of expansion of these organic materials is substantially higher than that of masonry backings; as a result, they are susceptible to shear stresses due to temperature changes, which may result in adhesion failures. In thick films, epoxies and polyesters are likely to be flammable.

Use of Polyesters and Epoxies

The chemical and impact resistance characteristics of solution-type epoxy coatings are superior to those of high-solids type formulations. High film build, however, requires the high-solids type.

Epoxy resins may be blended with silica sand and other aggregates to produce trowel-applied flooring. In thicknesses of about one-quarter inch, such floors combine chemical and abrasion resistances of an unusually high order. These attributes can be bestowed on the entire floor surface, including equipment bases and other unusual shapes which require protection.

The polyesters achieved substantial popularity because of their exceptional abrasion resistance, combined with excellent resistance to acid attack (but not to alkali) and valuable color-retention qualities. As wall or floor coatings, however, they possess certain disadvantages. The polyesters are extremely sensitive to temperature and humidity during the curing cycle; some formulations emit a strong odor at the time of application, which may persist for weeks in cases of poor ventilation. The cured coatings may be highly flammable, with the additional possi-

bility that any smoke emitted may be highly toxic.

The polyurethanes quickly gained wide acceptance because they offer a wide selection of color effects, varying from subtle pastels to bold tones. They are also noteworthy for their abrasion resistance. Their flammability is far lower than other thermosetting materials; indeed, they are only marginally categorized as thermosetting.

The urethanes have many surfacing uses; one of the most unusual is in combination with fine silica aggregates. In this type of application, pigmented urethane resins and fine silica aggregates are blended within a special spray gun to form a textured coating with excellent filling and hiding properties.

Solution urethane formulations have also been developed as thin monolithic floorings. Since the urethane liquid is colorless, these floorings are usually made up with plastic color flakes suspended in the film.

The rigid thermoplastics have earned recognition because of their decorative qualities and relatively low cost. These materials — the family of vinyl compounds — are not particularly elastic. They are quite flexible, however (that is, they don't stretch but they do bend). A wide variety of textures and colors are available in vinyl compositions.

Solution vinyl formulations can be made elastic by the addition of plasticizers. The gradual migration of the plasticizer reduces the elasticity of the film, and may lead to embrittlement; migration of the plasticizer is hastened by ultraviolet exposure. Vinyl films are highly resistant to chemical damage, do not support fungal growth, and adhere well over masonry backings. The plasticizing agents used are flammable, although the vinyl material itself is not.

(Continued on page 130)



Ponding causes a whole deluge of problems. Zonolite roof deck systems turn them off.

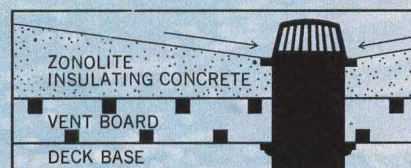
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Hazardous Materials

How the design and application of some materials can create serious health hazards is reported by the Chief Specifications Writer of Skidmore, Owings & Merrill, New York.

Last February this column pointed out the hazards in the use of sprayed-asbestos insulation. The New York City Air Resources Commission has since instituted strict controls in the application of sprayed-asbestos fire protection to protect both the installers and the unsuspecting public.

These new ordinances require the complete sealing off of the area in which the work is to be performed by means of tarpaulins or temporary enclosures; use of approved Bureau of Mines masks; warning signs; cleaning up operations after installation; vacuuming of droppings into sealed containers and disposal in approved sanitary fills.

Awareness of this hazard should prompt us to examine all of the building materials that are currently employed, and especially the man-made products of chemistry in order to learn about their potential danger. If we can recognize the problem areas we should be able to minimize their hazards. Some materials pose certain problems during installation. Other materials can present certain problems as a result of their exposure in the completed design.

During application, there are countless materials that require special precautions. Spray fibers for thermal insulation, fireproofing, and sound isolation, whether they contain asbestos, mineral wool, or similar fibers, can pollute the atmosphere with irritants that may be harmful upon inhalation. Enclosure of the areas where these operations occur may be necessary. Mixing of volatile paints and coatings that may cause explosive reactions must be

carried on under controlled conditions. Tar products have been known to produce skin irritations and rashes. Some sealants have acrid fumes that may be harmful to people who are sensitive and allergic to these properties. It is essential that manufacturers recognize these problems and develop precautionary programs to reduce and minimize these hazards in the mixing, preparation, and installation stages. Contractors and installers should be cautioned and they should introduce safety measures for the protection of personnel involved in these applications.

For many years architects and engineers have designed buildings with components that are now being recognized as having a deleterious effect upon the inhabitants. For example, ducts, air shafts, and ceiling plenums utilized for the movement of supply or return air are sometimes lined with fiber-like materials such as asbestos, mineral wool, and fiberglass. These materials are used for either fire-resistant properties in the plenum areas or for sound isolation or thermal insulation in ducts and air shafts. They are constantly being eroded by air movement and the particles are carried into the air supplied in the habitable areas. Studies being conducted by some medical authorities indicate possible contamination of the air supply that may cause irritation, at the least, and serious health hazards at the worst. Details of designs should be reexamined to place these materials externally if possible, out of the air stream, or by coating and sealing these surfaces when there is no other solution. Some municipal bodies are

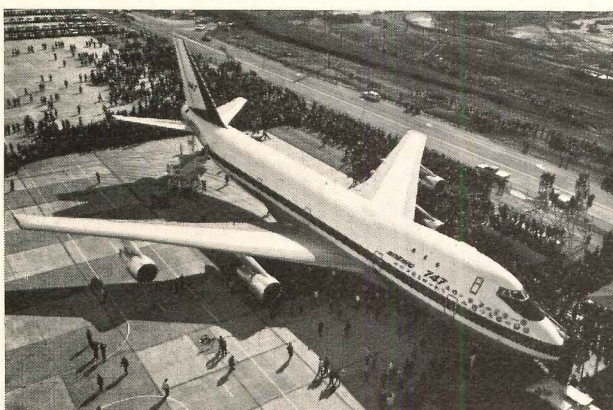
studying these problems and are considering ordinances which may preclude the use of such materials when they are exposed in air handling designs. A recent New York City ordinance requires the sealing or coating of these fibrous materials in ceiling plenum areas.

Some materials, such as urethane foams, have been known to give off noxious gases when exposed to fire and are presumed to have lethal effects upon individuals exposed to these fumes. The new New York City Building Code, enacted in 1968, contains a provision against the use of materials for interior use that emit gases upon incineration that are more toxic than those produced by the burning of wood or paper. While no standard test method has been promulgated to evaluate the degree of toxicity of burning wood or paper as compared to other materials, one must begin to take cognizance of these materials as possible health hazards when subjected to fire. It is a well known fact that more fatalities occur from smoke and gas inhalation than from fire itself. In the disastrous Boston Cocoanut Grove fire, in the early 1940s, hundreds perished from the effects of smoke and fumes developed by the burning of coated decorations, than from flames produced by the fire.

Many plastics used in building construction should be tested for smoke development and fuel contribution, as well as flame spread characteristics, to determine whether, in the event of fire, the effects of smoke will be a contributory cause for fatalities. In addition, a meaningful standard test procedure should be developed to measure the toxicity resulting from the burning of materials to ascertain the level at which certain of these materials might be considered detrimental to the health and safety of the inhabitants.



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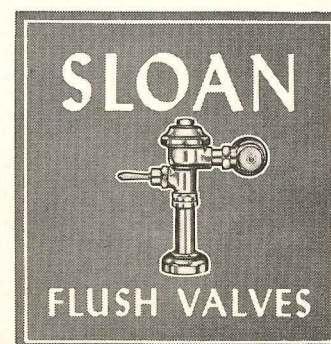
■ 205 million cubic feet—the world's largest building by volume—sits next to Paine Field in Everett, Washington, where over 12,500 workers turn out the world's largest jet airliner—The Boeing Company's 747 superjet.

Under one roof is housed space for manufacture, subassembly and final assembly of a jetliner 231 feet 4 inches long, with a wing span of 195 feet 8 inches and a tail 63 feet 6 inches high—taller than an average five-story building. Boeing's main assembly area here is 115 feet high and consists of three bays with 1,365,000 square feet of covered floor area. Adjoining are areas devoted to cleaning, sealing and painting sections of the aircraft before final assembly; areas for full scale mockups, static testing, warehousing, and plant services. Two office buildings and a cafeteria complete the huge complex.

Preparation of the 780-acre site began in Spring 1966. By the time peak production is reached in early 1971, over 17,000 are expected to be employed. Just as this huge complex houses the most modern manufacturing equipment in the aerospace industry, so its personnel facilities are designed for the utmost comfort of workers and visitors. For example, Sloan Flush Valves for the washrooms were selected—assuring quietness, efficiency, reliability and long life with a minimum of maintenance.

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Enforcing Low Bid Errors

When a contractor's low bid is based upon an error, the general principles necessary to enforce the bid are relatively uniform. However, difficulties arise in applying these principles to specific factual situations.

The courts are often called upon to determine disputes arising from the refusal of a contractor who has furnished the low competitive bid to enter into a contract with the owner, on the ground that the bid was based upon error or mistake. The essential elements of a unilateral mistake which must be present to excuse the enforcement of a bid are relatively uniform in most of the jurisdictions of the United States. In general, the mistake must be of such consequence that it would be unconscionable to enforce the bid, the mistake must relate to a material feature of the bid, the mistake must have occurred despite the exercise of ordinary care on the part of the contractor, and it must be possible to place the owner in status quo. The difficulty arises, however, in applying these general principles to specific factual situations.

In a recent case (*Brook-Lea Country Club, Inc. v. The Hanover Insurance Company*, 306 N.Y.S. 2d, 780), a bonding company of a contractor was sued for damages by an owner for failure of the contractor to enter into a construction contract after he had submitted the low bid. The owner was a country club that wished to install a golf course irrigation system. In the preparation of his bid, the contractor required certain subbids for work which related to the electrical equipment and wiring system. The owner's engineer, to assist this contractor, contacted an electrical subcontractor who furnished the contractor a bid for this work. However, prior to the submittal date, the contractor, because of his inability to secure a reliable bid for that part of the work having to do with a water storage reservoir, advised the owner that he would not submit a bid, and returned the plans and specifications

to the owner's engineer.

After bids were opened, no action was taken by the owner. Instead, the owner's engineer called the contractor who had not submitted a bid and asked him to bid, stating that the owner would waive the inclusion of the work for the water storage reservoir. The contractor then submitted a bid, together with a bid bond, based on the notes made by his estimator and excluding the water storage reservoir. The bid was in the amount of approximately \$115,000, as compared to \$134,000 to \$170,000, which was the range of other bids excluding the reservoir.

The owner, without advising this contractor, rejected all of the original bids and requested a rebidding from the original bidders. These rebids were still substantially higher than the bid of the contractor who had prepared his bid without the plans and specifications in his possession. In the meantime, this contractor had requested the plans and specifications be returned to him, and after further study, he discovered that the bid of the electrical subcontractor which had been procured for him by the owner's engineer did not include all of the electrical work called for in the plans and specifications. Thereafter the contractor advised the owner that there was a \$7500 mistake in his bid and revised the bid to approximately \$124,000. He refused to enter into a contract for the original bid price and the owner negotiated a contract with another contractor for approximately \$120,000.

The bonding company of the contractor who had refused to enter into a contract defended the suit brought against it on the ground that its insured made an error because it did not have possession of the plans and

specifications when the bid was made, and that such a mistake was, therefore, excusable. The court upheld this contention, stating:

Plaintiff says that Miller (the contractor) waited two weeks from the notification that he was low bidder until he complained about his mistake. The proof is not quite that way. At the time Miller was notified on October 13 that he was the low bidder, he did not have the plans nor did he know the job had been rebid.

Quite understandably plaintiff (the owner) was happy to have Miller's original low bid and in effect used it as a yardstick and pattern against which to measure and tailor the rebids. Under the circumstances, when plaintiff knew a rebid was to be had, the plans and specifications should have been returned to Mr. Miller so that he too could have an opportunity to rebid.

In my judgment it would be unconscionable to permit plaintiff to rely on the Miller bid. Miller's mistake did relate to material features of the job. The misunderstanding as to the Bernhardt (the subcontractor's) bid appeared to be the principal reason. Whether or not Mr. Barrow (the owner's engineer) represented that the bid included all the wiring is of no particular consequence. Mr. Miller assumed erroneously that it did, and this led to a material difference, which would have been apparent if Miller had had the plans and specifications. When the plans were returned in October, while Mr. Miller was in Texas, the contractor found the discrepancy without any problem.

It cannot be said that Miller did not use ordinary care in making its bid. It did the best it could with what it had on September 28, 1966.

Finally, plaintiff actually benefited by Miller's hastily contrived bid. The successful contractor took the job for \$120,705, which was nearly \$7300 less than the second lowest bidder on the rebid.

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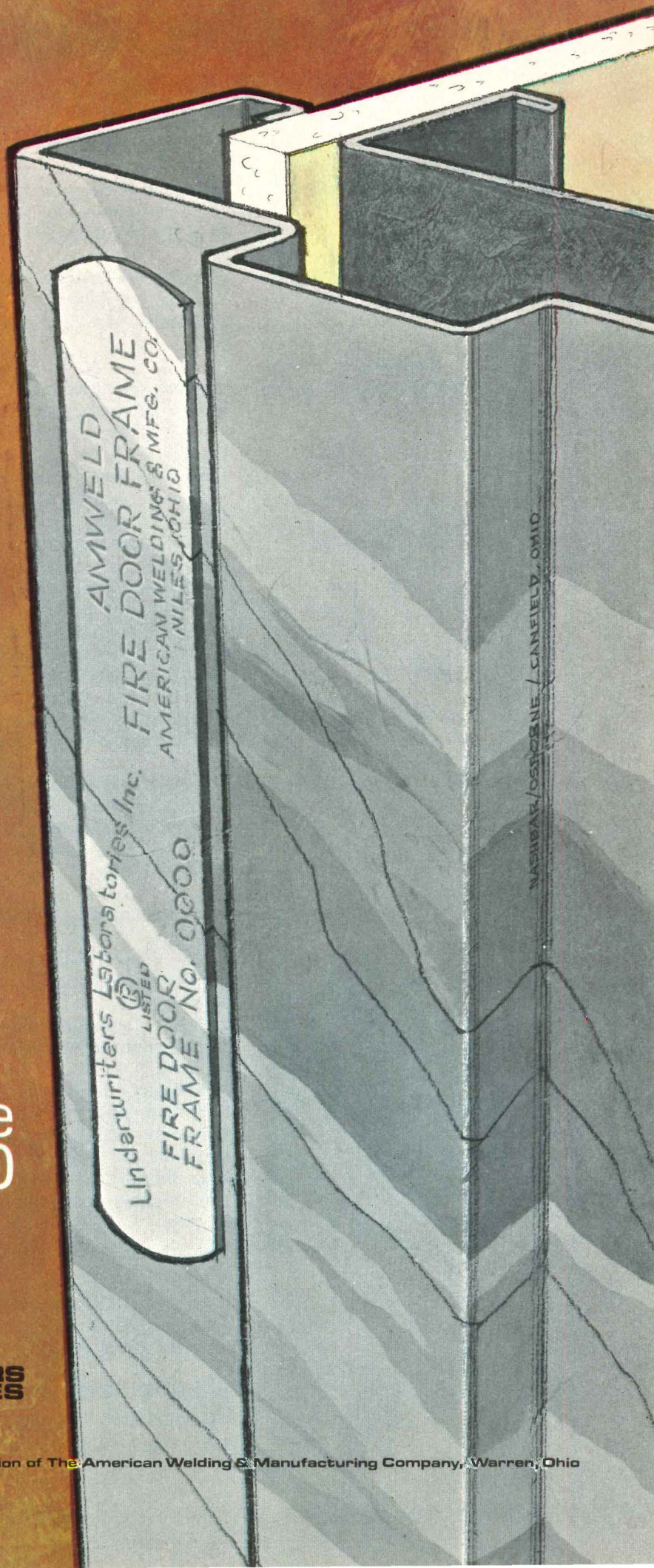
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ANNUAL P/A DESIGN AWARDS PROGRAM for PROJECTS NOT YET BUILT

Progressive Architecture

announces the eighteenth annual Design Awards Program. Awards will be made to U.S. architects and their clients for projects now in the design stage to be built in 1971 in the United States. *Any building or group of buildings will be eligible.*

Purpose

of the Design Awards Program is to give recognition to good design in the period of design development, rather than after completion, in order to encourage the designers and owners of the projects so honored.

First Design Award, Awards, and Citations

may be given by the jury listed below to the best projects chosen on the basis of site use, choice of structural system and materials and methods of construction, solution of the client's program, and over-all design excellence. A new category this year will be for special projects that are involved in total environmental control solutions. JURY will be composed of the following architects, planners, and engineers: **EDWARD LARRABEE BARNES**, Principal, Edward Larrabee Barnes, Architect, New York; **EZRA D. EHRENKRANTZ**, President, Building Systems Development, Inc., San Francisco, Associate Professor of Architecture, Department of Architecture, University of California at Berkeley; **JAMES MARSTON FITCH**, Professor of Architecture, School of Architecture, Columbia University, New York; **ULRICH FRANZEN**, Principal, Ulrich Franzen, Architect, New York; **MYRON GOLDSMITH**, Partner, Skidmore, Owings & Merrill, Architects/Engineers, Chicago, Professor, Department of Architecture, Illinois Institute of Technology.

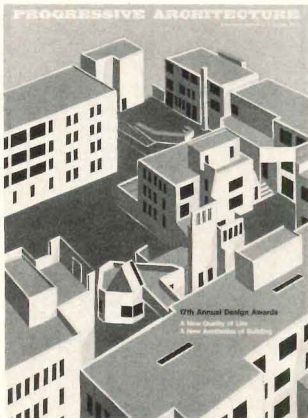
Judgment

will take place in Stamford, Conn., during September 1970. Winners of Awards and Citations will be notified (confidentially) immediately after the judgment.

Announcement

of the winning projects will be made at a presentation in the home town (if practicable) of the recipient of the First Design Award. Winning projects will be featured in January 1971 P/A. As in the past, P/A will arrange coverage of winning projects in news media, particularly in those localities of the Award and Citation winners.

Submissions



do not require filling an application blank. For each project you submit, simply send:

1. On a 5" x 8" card, type the client's *name, location, and proper name of project; name and address of the architect;* and identify all items included in the submission.
2. Brief explanation of the program and your solution.
3. Description of materials and construction methods used, and the reasons for their use.
4. Site plans; basic building plans; pertinent sections and details.
5. Perspective or model photographs.
6. A statement that: (a) the project is now in the design stage and that construction is anticipated in 1971; and (b) that submission of a project for judgment gives PROGRESSIVE ARCHITECTURE first rights in the architectural field to publish both the project and the finished building if it receives an Award or Citation.

It is preferred that you submit 8" x 10" prints, photostats or photographs bound in a folder.

Original drawings, actual models, or mounted exhibit panels will not be accepted and no material is to exceed 11" x 17" in size. Each project is to be submitted under separate cover.

Deadline for Mailing

is August 31, 1970. Address entries to Awards Editor, PROGRESSIVE ARCHITECTURE, 600 Summer Street, Stamford, Conn. 06904. P/A will guard and return all submitted material.

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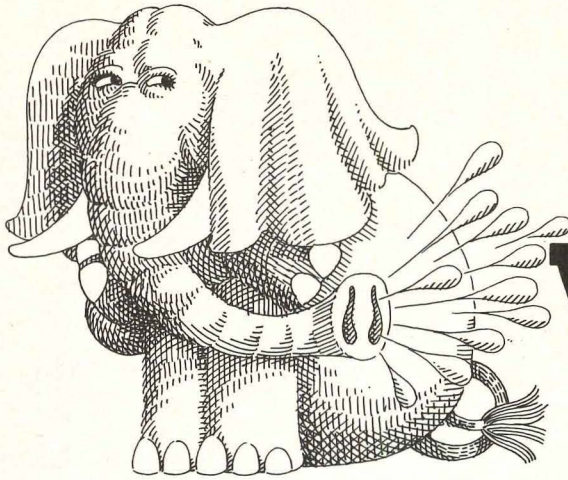
blades for wheel chair patients. All are stainless steel, completely preassembled and ready for installation. For hospitals, motels, dormitories—all public and private washrooms—write "Bradpack." Got the word? See your Bradley representative. And write for literature, Bradley Washfountain Co., 9109 Fountain Boulevard, Menomonee Falls, Wisconsin 53051.

On Readers' Service Card, Circle No. 329

from Bradley!



New CELRAMIC® Insulating Roof Fill



CUTS WEIGHT, WAIT AND WATER



Cross section of fill (actual size) shows excellent dispersion of Celramic nodules.

Celramic Roof Fill eliminates the traditional problems with insulating concrete. Reason: drastic reduction of water-cement ratio to .62, about the same as for structural concrete.

Low water-cement ratio brings curing time within manageable limits. You can usually roof over in two days. Base for builtup roofing is strong, durable concrete, not a weak, powdery surface.

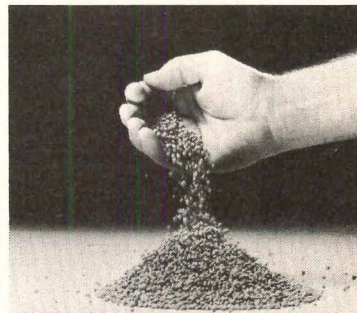
Celramic fill gives you reliable, lasting strength, because shrinkage is less than 0.12%. Residual moisture is negligible. Dry density is just 22-25 lbs./cu. ft.

Key to low water requirement is the aggregate—Celramic nodules. The nodules are sealed, closed-cell glass spheres that are nonabsorbent, inorganic and incombustible.

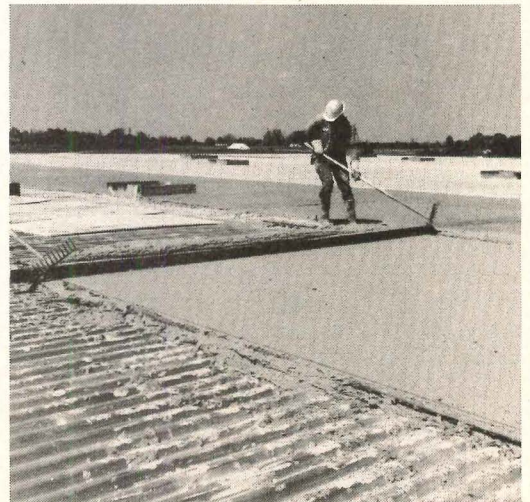
Over steel centering, Celramic fill has a two-hour rating under ASTM E119 fire endurance test. Insulating value is real (K is .68). Spherical shape of the nodules gives Celramic fill easy workability. It can be sloped for drainage.

For the significant improvements you get with Celramic fill, in-place price is very reasonable. Send for free sample and technical booklet. Pittsburgh Corning Corporation, Dept. PP-70, One Gateway Center, Pittsburgh, Pa. 15222.

Celramic fill is not presently available west of the Rockies.



Aggregate is Celramic nodules of sealed closed-cell glass.



Celramic fill is easy to work, but won't bleed through joints.



Patcraft carpet of **Vectra fiber** gets underfoot down on the farm.

Patcraft "Travel Master" tufted carpet really got down to earth...bonded to the bottom of a farmer's boots. It saw more dirt in a day than most carpets worry about in a lifetime. We devised this grubby test to prove an important point. That whatever stain and scuff-prone area you want to carpet...be it hospital, schoolroom or hotel lobby...Travel Master is equal to the task. And then some. Witness how it cleaned up after literally being run into the ground. Couple this stain and wear-resistance with Vectra fiber's extraordinary resistance to fading, and you have a carpet that's equal to the toughest challenge. Patcraft Travel Master tufted carpet, made with spun yarns of 100% Vectra Fiber. Farm it out with confidence.

Pile of 100% solution dyed Vectra olefin fiber	Secondary Backings—
5/64 gauge	High density rubber
Pile Wt.—21 oz. per yard	Jute
Pile Ht.—1/8 inch	Hard Waffle Back
Primary Backing—	
100% polypropylene	

After a day out on the west forty, Patcraft's carpet of Vectra® fiber looked like this...

...and cleaned up like this.

Patcraft Mills, Inc. / Box 1087
Dalton, Georgia 30720

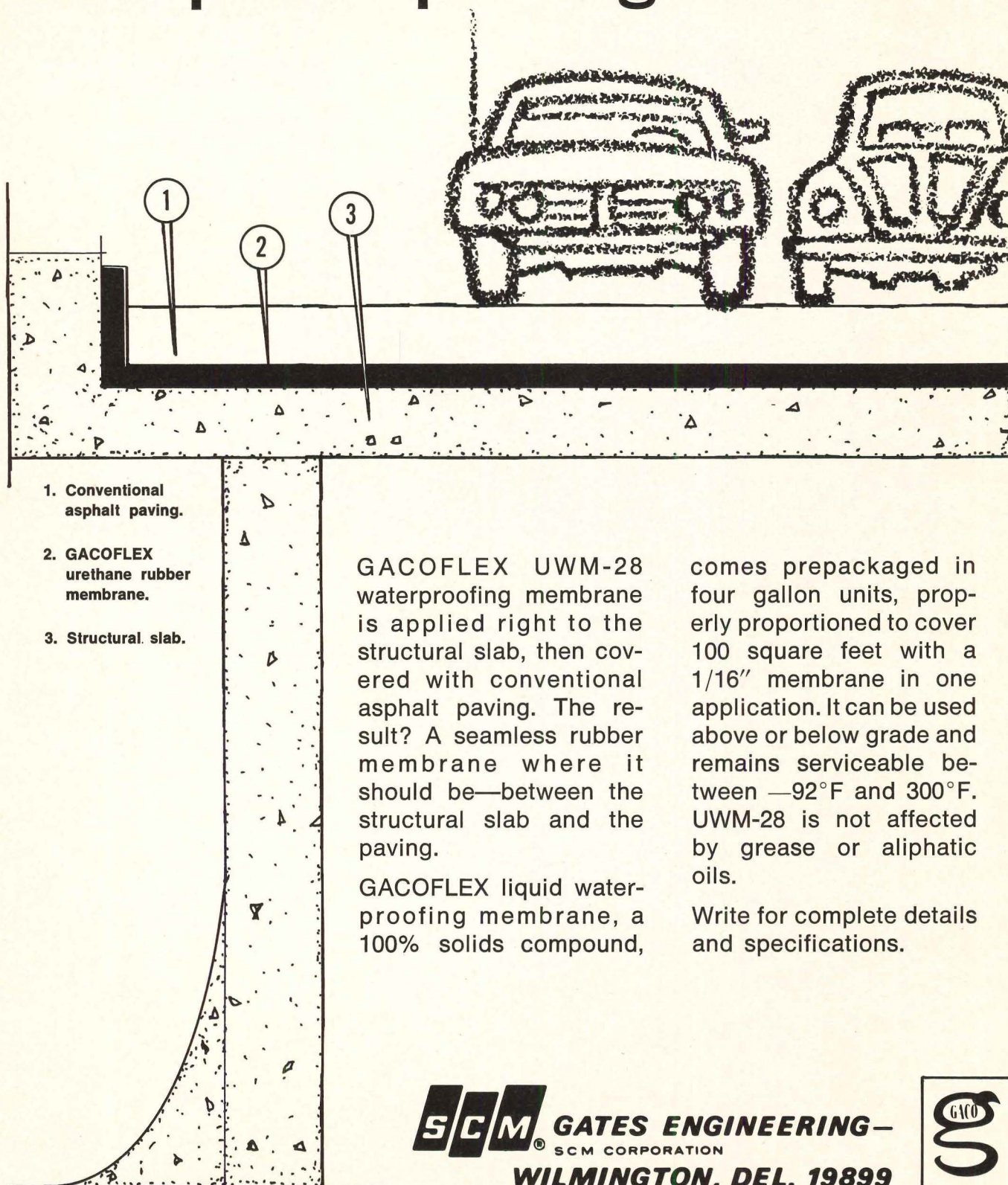
Please send me samples and complete information on your new Patcraft Travel Master carpet made with Vectra fiber.

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 FIRM _____
 ADDRESS _____
 CITY _____
 STATE _____ ZIP _____



Vectra® olefin fiber is manufactured by Enjay Fibers and Laminates Company, Odenton, Maryland, a division of Enjay Chemical Company. Odenton: (301) WO 9-9000. New York: 60 W. 49th Street (212) 974-3000. Atlanta: 225 Peachtree Street, N.E. (404) 688-4250. Enjay makes fiber not carpets.

Now GACOFLEX urethane rubber membrane waterproofs parking decks



1. Conventional asphalt paving.
2. GACOFLEX urethane rubber membrane.
3. Structural slab.

GACOFLEX UWM-28 waterproofing membrane is applied right to the structural slab, then covered with conventional asphalt paving. The result? A seamless rubber membrane where it should be—between the structural slab and the paving.

GACOFLEX liquid waterproofing membrane, a 100% solids compound,

comes prepackaged in four gallon units, properly proportioned to cover 100 square feet with a 1/16" membrane in one application. It can be used above or below grade and remains serviceable between -92°F and 300°F . UWM-28 is not affected by grease or aliphatic oils.

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There are tall doors, short doors, wide doors, thin doors, fire doors, soundproof doors, solid-core doors, hollow-core doors, wardrobe doors...you're not the first to have problems deciding on the right one. Every one of your buildings needs such a variety of doors. Then codes, design and cost problems must be considered. And considering the wide variety of doors available, who wouldn't have trouble? There is just too much material put out by the manufacturers for you to get through.

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U.S. Plywood has more people who know more about doors than any other manufacturer.

And even if you find yourself in a situation we don't know about, we know where to find the way out.

If you have a problem with doors, call our Architectural Service Representative. He's ready to work with you now.

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Since his reputation is on permanent file, Jay is very critical. But that's the way we want him to be. That way, nothing but our very best will ever leave the plant.

Quality materials, advanced engineering principles and careful workmanship make a Natcor door something Jay is proud to sign his name to.

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*The Serial Number is located in the top rail of the door.

For complete information on Natcor's full line of doors and entrances, see our catalog in Sweets or write:

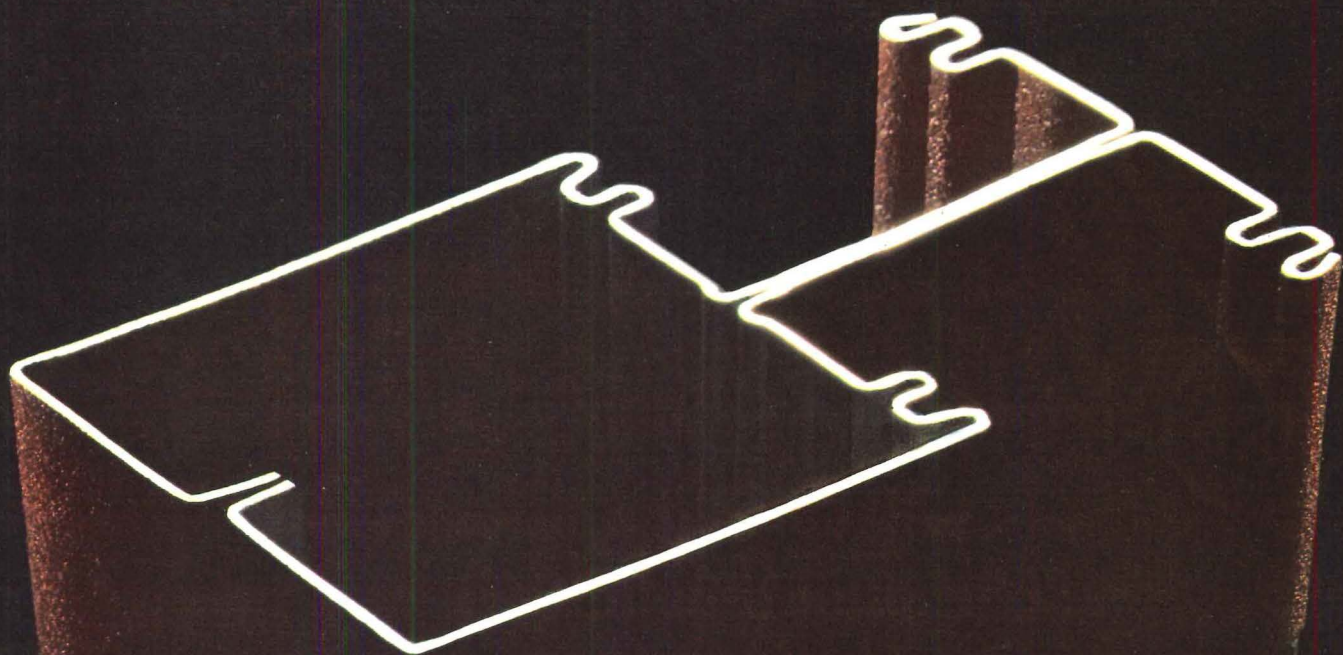


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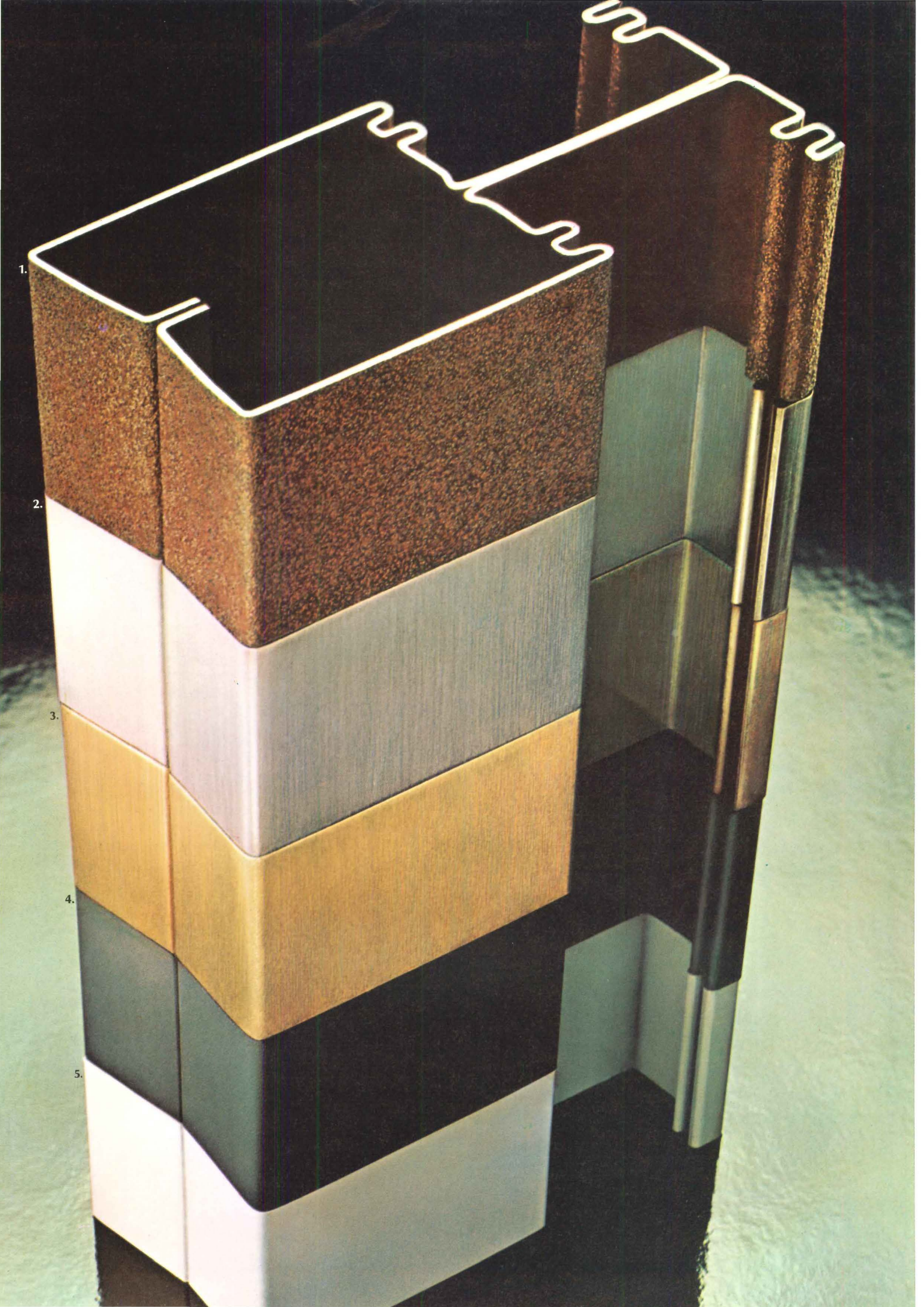
There's USS ULTIMET in bare COR-TEN Steel — the natural weathering steel curtain wall. If it's color you want, there's a whole spectrum to choose from with USS ULTIMET in Color Coated Galvanized Steel. And we've just added a beautiful new curtain wall material that you'll be hearing and seeing more of — USS ULTIMET in Bronze Clad Stainless Steel — the real thing — not just a substitute...and the cost will be a pleasant surprise. Horizontally and vertically pivoted windows, projected windows and narrow stile entrance doors complete the package.

We'd like to show you what our total capability can do for you. If you have a curtain wall job that you're putting together, we can put it all together for you in USS ULTIMET. Call or write J. Alan Myers, General Manager, Architectural Products, American Bridge Division of United States Steel, 5 Gateway Center, Pittsburgh, Pa. 15230. Phone: (412) 433-3267.

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American Bridge Division of United States Steel

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4. & 5. Color Coated Galvanized Steel



1.

2.

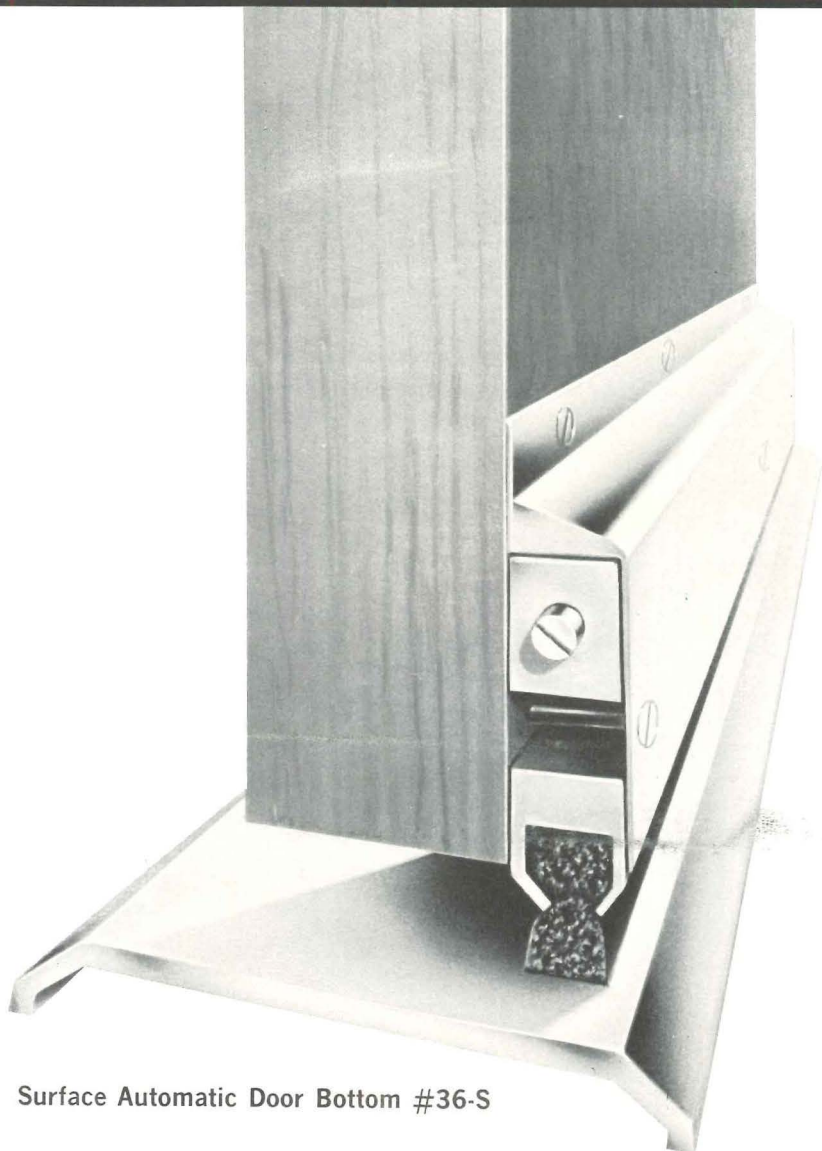
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CHEMICALS

(Continued from page 114)

Resin vinyl floorings have made their mark in the floor-surfacing field over the last decade. These floorings can be laid down in very thin layers — about one-eighth inch thick — and service experience indicates excellent resistance to wear, abrasion, and impact indentation. The vinyl resin formulations resist damage from most acids, alkalis, and such solvents as gasoline and alcohol. They are self-adhering compounds and exceptionally easy to maintain.

Uses and Applications of Elastomers

The elastomers can be used for interior surfaces, but their relatively high cost usually limits their use to problem surfaces. They possess excellent qualities of low-temperature flexibility, high chemical resistance, and adhesion. They are used where exceptional crack-bridging ability, resilience, vapor barrier, and chemical resistance are required.

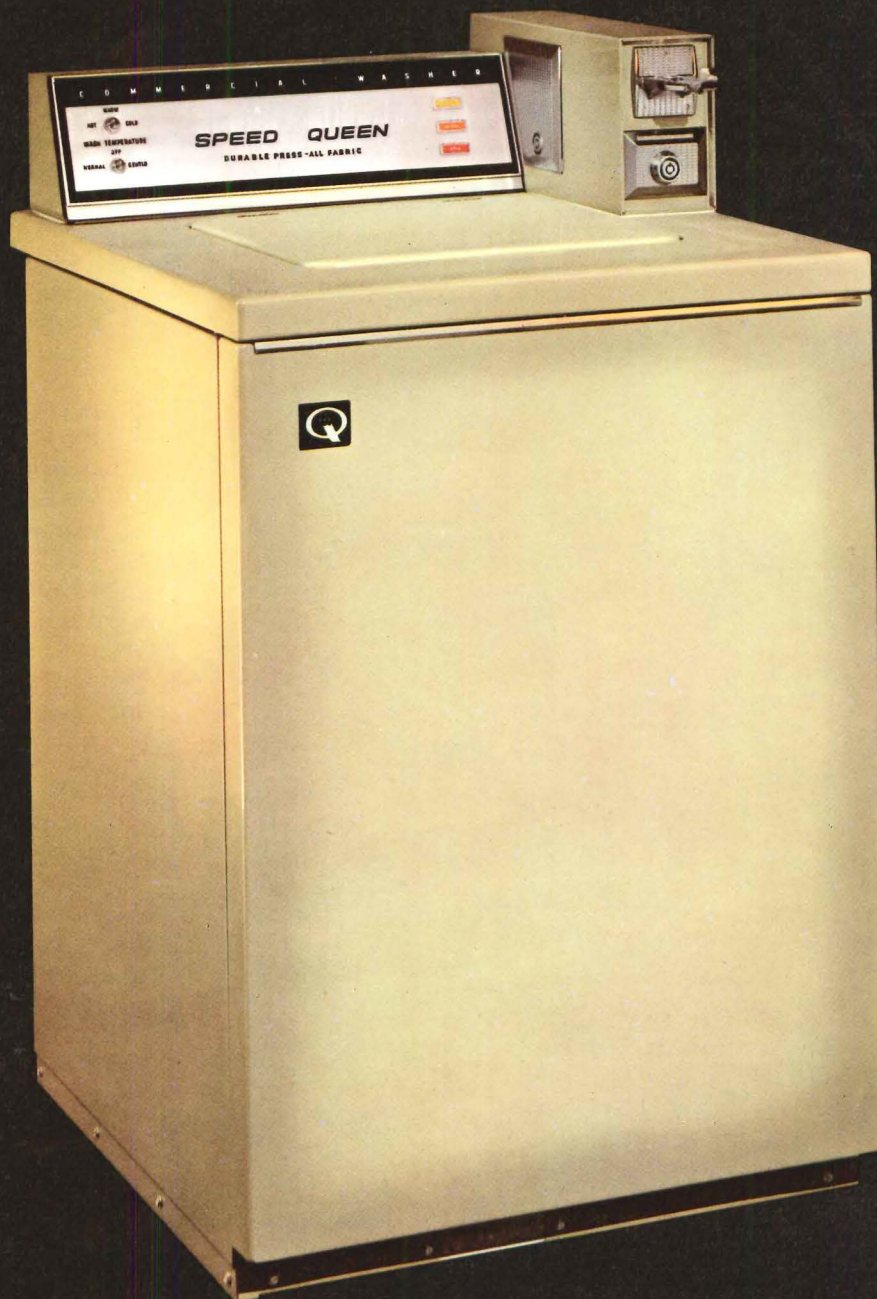
Elastomerics have proved to be particularly useful on those exterior surfaces that are neither horizontal nor vertical: free-form curves, cones, pinnacles, ovoids, and the like. They provide both protection and decoration.

The synthetic rubbers, neoprene and hypalon, are among the commonly used elastomers. The characteristics of neoprene-hypalon systems include excellent resistance to sunlight and heat, ozone, oxidation aging, abrasion, and oil and chemical damage. They can withstand the range of temperatures between -60F and +175F. Both neoprene and hypalon are self-extinguishing materials. They are tougher and more resilient than natural rubber.

The two elastomers are often used together, neoprene to form a tough, elastic foundation, and hypalon to provide a wide variety of hues for the finish. A neoprene-hypalon coating is a completely waterproof, seamless weather barrier. Weather and fade tests indicate that such coatings should have a long life span. The coatings cure to a dense surface impervious to detergents or cleaning materials and easy to maintain.

These neoprene-hypalon formulations can also be employed with aggregates and a reinforcing fabric to

(Continued on page 132)



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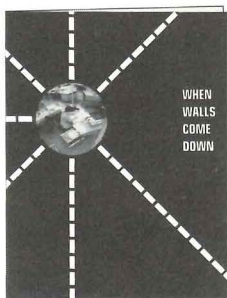
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When it comes to communications and electrical wiring in a situation like this



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CHEMICALS

(Continued from page 130)

form a waterproof walking deck. The elastomeric systems need not be bonded over the whole decking or flooring area, but can be bonded only around the perimeter, thus preventing the transmission of subsurface cracks or irregularities through the surface finish.

Some of the other chemical systems can also be used in exterior applications. The epoxy systems should only be used outside with great care; unless specially handled and formulated, they cure to a chalky, oxidized film.

The silica-sand plus urethane system has a special advantage in that its permeability rating can be controlled to three perms or better, permitting vapor transmission. Such a breathing coating is needed if a vapor barrier is not included in the basic wall construction. The breathing coating allows water vapor to pass freely, where otherwise it might build up, condense behind the coating, and cause film failure. While permitting vapor to pass freely to the outside air, the breathing coating restricts the penetration of exterior water.

Solution vinyl formulations are sometimes effectively employed on exterior surfaces, where their ability to bridge minor settlement cracks, to withstand chemical and weather damage, and to adhere to masonry backings are useful attributes. In exterior use, however, plasticized vinyl films are especially subject to the migration of the plasticizer and embrittlement of the film because of the ultraviolet component of sunlight.

Inorganic coatings can be employed in exterior applications as readily as in interiors. A need for a breathing coating, however, requires the omission of the final glaze, which is impervious to moisture. Unglazed inorganic surfacing systems have been shown to actually lengthen the useful life of concrete exteriors.

Thermosetting and rigid thermoplastic resins are useful as matrix materials for terrazzo. With resin matrices, a terrazzo floor can be 1½-in. thinner and 20 lb. psf lighter than with cement terrazzo. The vinyl-resin matrix provides a nonslip surface — warm, resilient, and with excellent chemical resistance. The epoxies, polyesters, and urethanes

(Continued on page 144)

It's the biggest, unbroken, consecutive, uninterrupted acrylic louver in the world. Measures 2½x5 feet, in step with the popular 5-ft design module.

Because it's acrylic, it won't yellow in 20 years. Because it's a louver, it transmits light efficiently, diffuses it beautifully. And because it's so big, it reduces structural pieces and supporting trim, leaves a cleaner ceiling with more illuminating surface.

Your current project has a 4-ft. module? Glad you mentioned it. We also have a nifty new 55° shielding, low-brightness louver in acrylic. Write for details and samples. 7700 Austin Ave., Skokie, Ill. 60076

Gads! An acrylic louver big enough to cover an entire ceiling!



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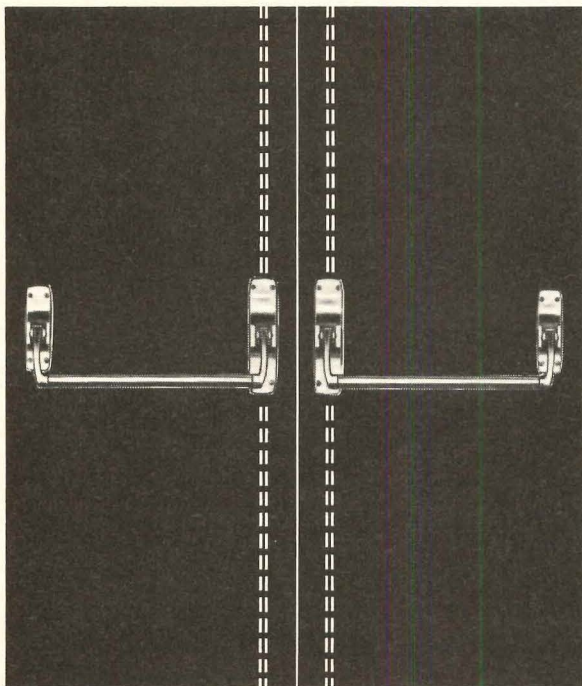
Call (312) 966-0300.
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Specify Type 16 Louvers.

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Another Von Duprin Breakthrough at UL





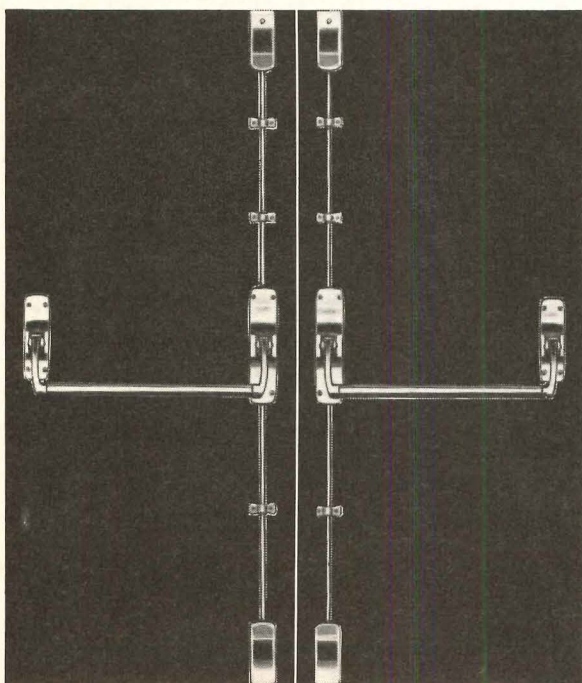
Concealed Fire Exit Hardware

The Von Duprin concealed vertical rod Fire Exit Hardware is now listed by Underwriters' Laboratories for use on B, C, D and E label fire doors in openings up to 8' by 8'. No astragal . . . no coordinator.

Available with exit only function, or with outside (hinge side) lever operation.

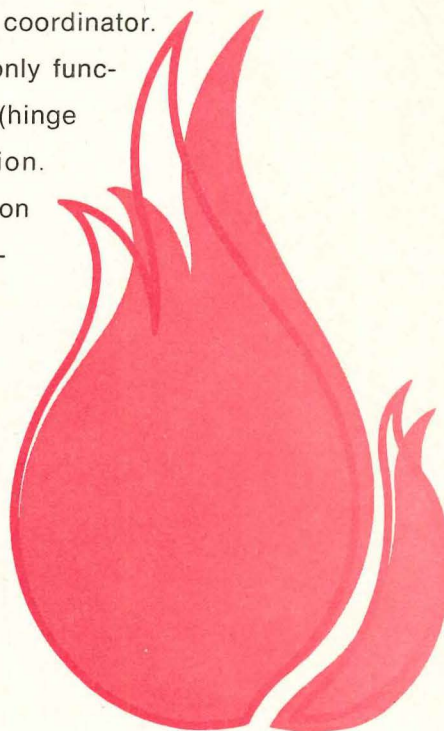
For complete details on this newly listed application of Fire Exit Hardware, write for Bulletin 676.

**No Astragal • No Coordinator •
B, C, D, E Label Fire Doors**



Surface Mounted Fire Exit Hardware

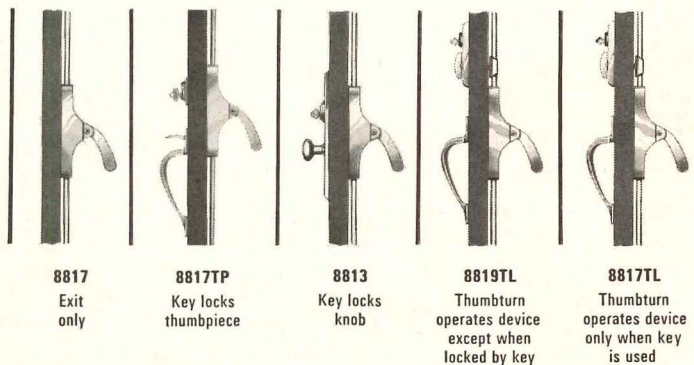
Another major breakthrough by Von Duprin in Fire Exit Hardware listings at Underwriters' Laboratories! For the first time, you can now use a pair of vertical rod devices on B, C, D and E label fire doors. Without an astragal! Without a coordinator! And in openings up to 8' by 8'. And you have a choice between surface applied devices, or the concealed devices above. Write for Bulletin 676.



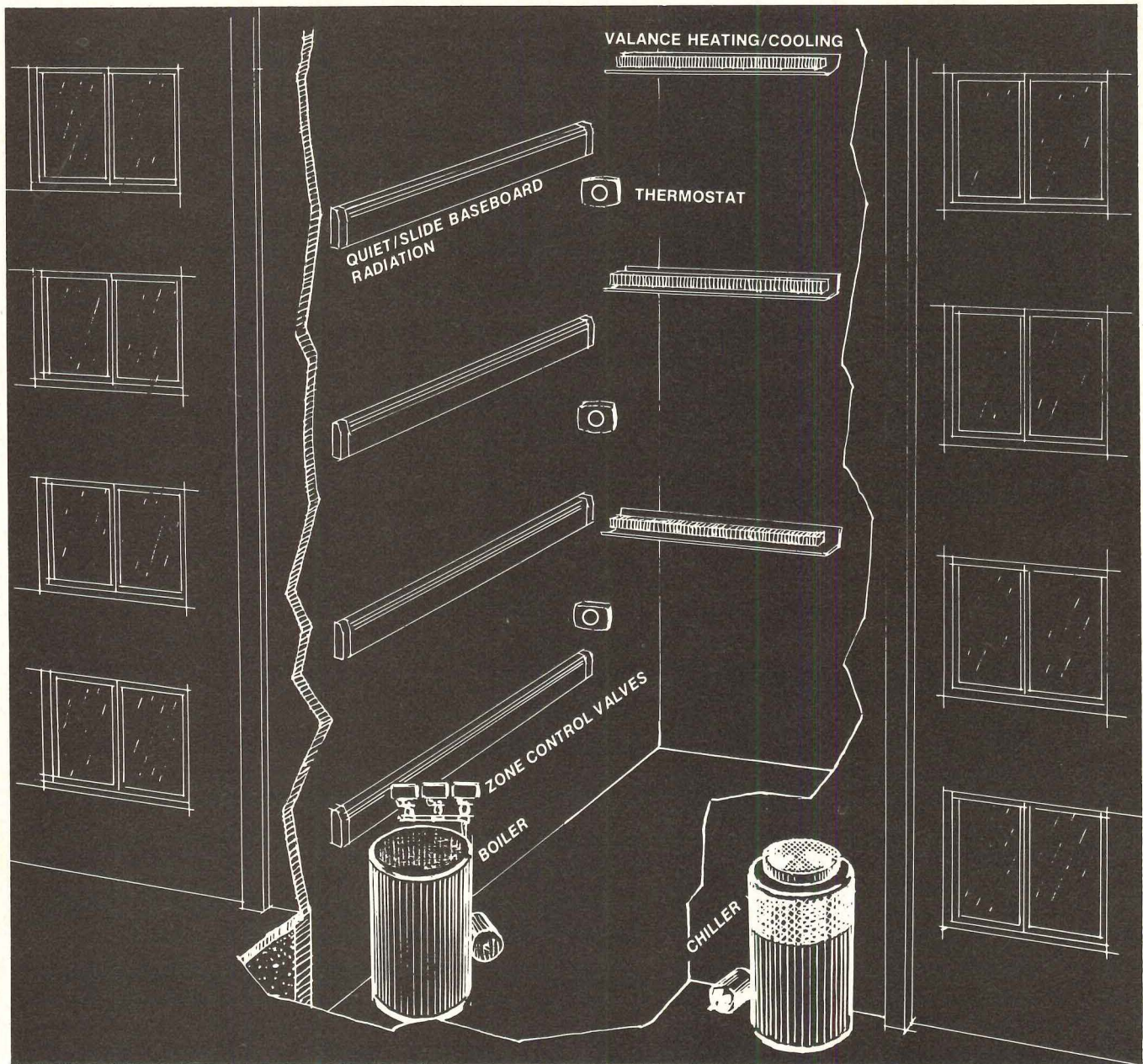
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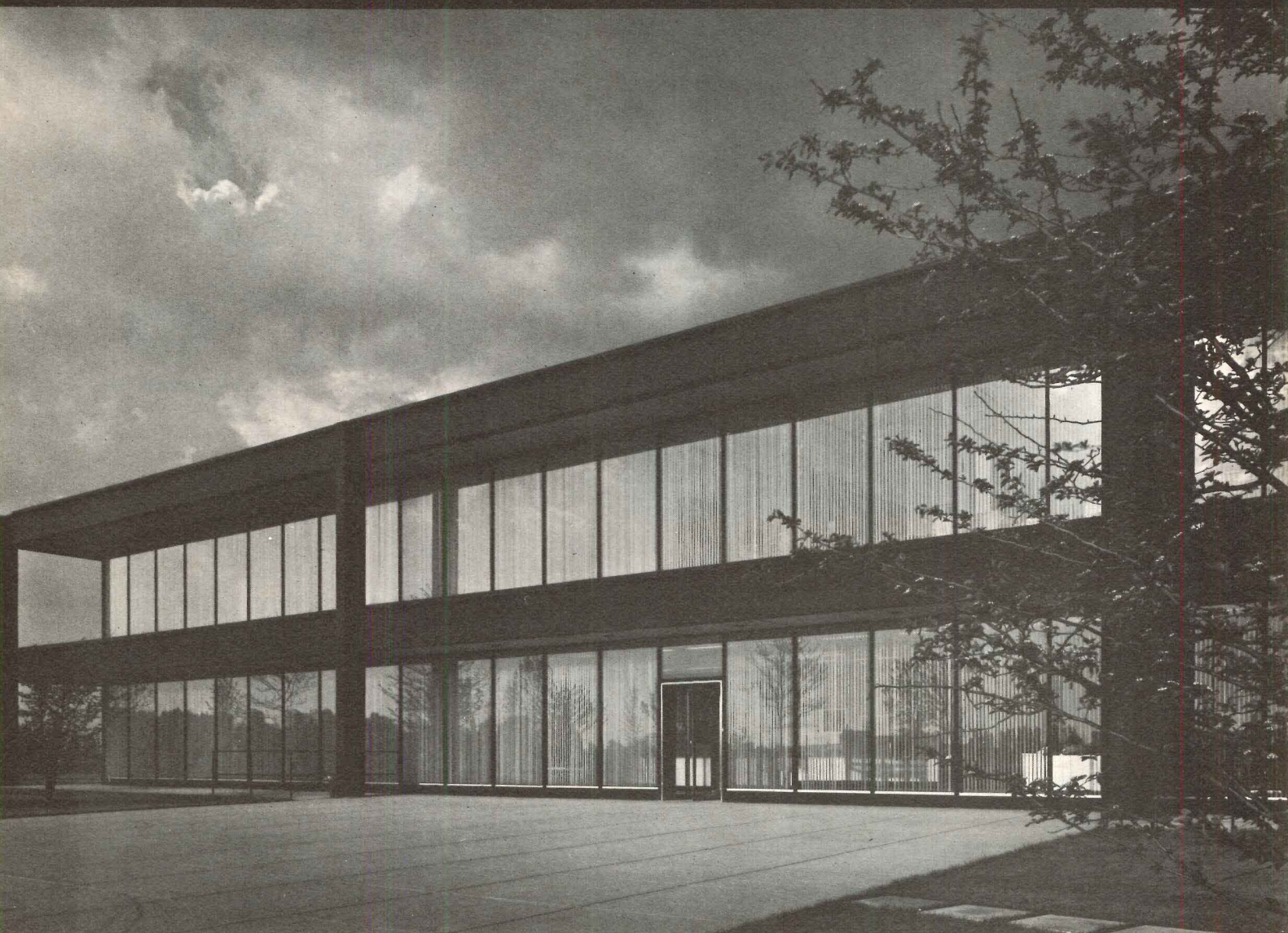


Photo by Ezra Stoller (ESTO)

Inland Steel Company Research & Development Laboratories, East Chicago, Indiana
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The large fixed windows comprising the window walls in this extensive laboratory complex were carefully engineered in close cooperation with the architectural designers. Special attention was given to windload, glazing and installation. All window frame components (head, jamb and sill members) were machined from light structural steel beams and hot-dip galvanized before assembly. From the outset all Hope's efforts in engineering, fabrication and erection were directed towards producing an installation of custom steel windows which would require minimal future maintenance.

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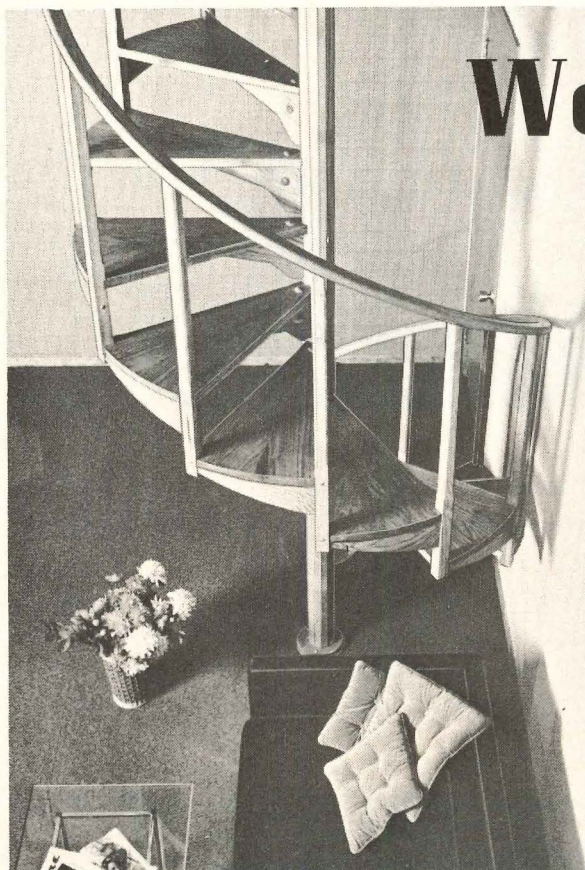
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CHEMICALS

(Continued from page 132)

(the thermosetting resins) provide unusual chemical resistance, hardness, and abrasion resistance. They can withstand even the abuse of steel-wheel trucks.

Vinyl resins, either as floor surfacing systems or as a terrazzo matrix, can be made conductive with the addition of a controlled quantity of finely divided carbon. Conductive floors prevent explosions that might be induced by buildup of static electricity. Such floors, laid to the specifications of the National Fire Protection Association, are serving in hospital operating and delivery suites, areas of high dust or powder concentration, ammunition manufacturing locations, and the like.

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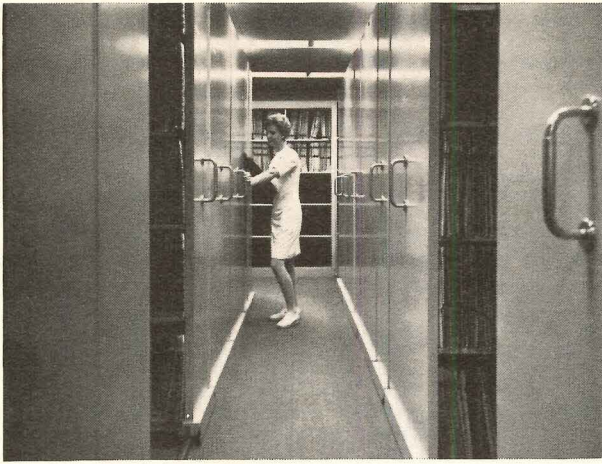
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Continued on page 148



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Continued from page 146

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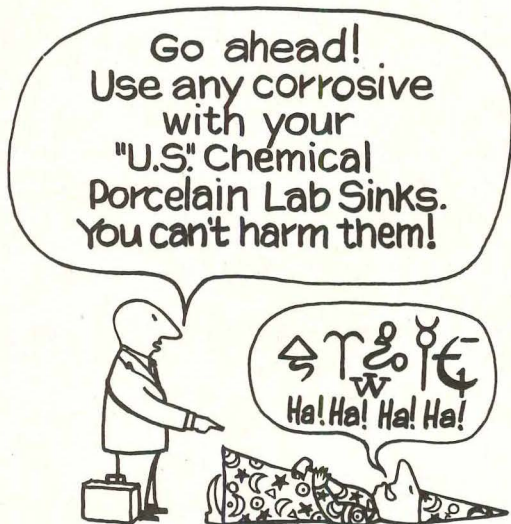
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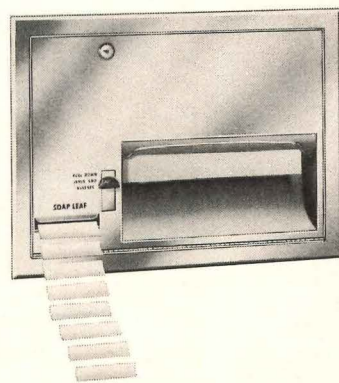
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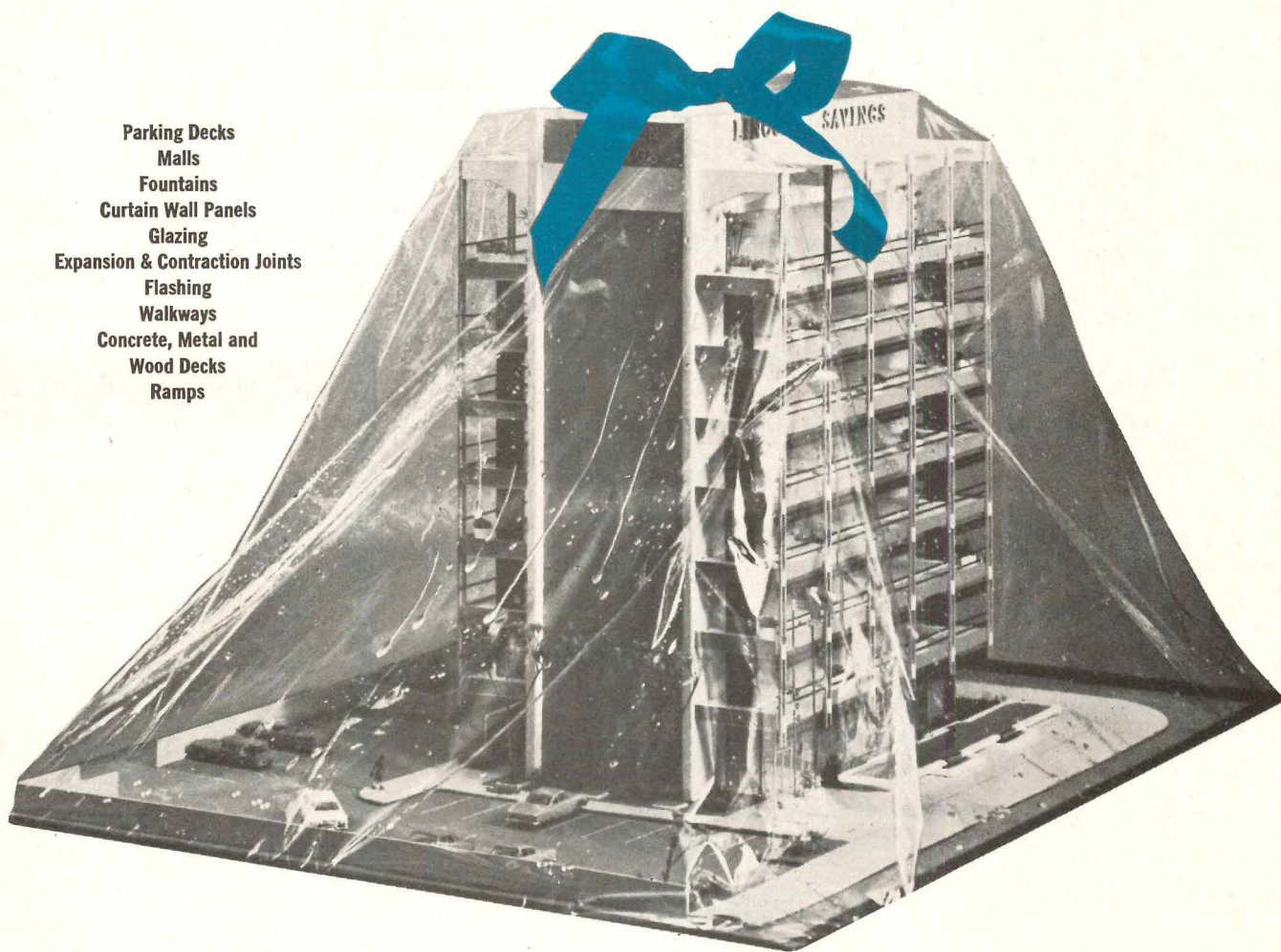
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